

REVISION OF THE *AMYCTERIDÆ*.PART I. GENUS *PSALIDURA*.

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The Australian *Curculionidæ* comprising the subfamily *Amycteridæ* constitute a natural and striking group of weevils, peculiar in their structure and habits. The species are for the most part large, and are all wingless, with extremely short rostra, hard elytra, so hard as frequently to bend the pin in trying to pierce them, and antennæ with a six-jointed funicle.

They have been divided somewhat arbitrarily into the long- and short-scaped forms, both groups being found over the whole Continent, but more numerous respectively on the east and west sides.

The long-scaped forms again constitute two natural groups, one comprising the genera *Acantholophus* and *Cubicorrhynchus*; and the other the genera *Psalidura*, *Talaurinus*, and *Sclerorrhinus*. The genus *Amycterus* seems in many respects intermediate between the two groups. The *Psaliduræ* are peculiar in the structure of the sexual organs of the male, these insects possessing large, curved, anal forceps, projecting posteriorly; these are also present in *Talaurinus*, but are hidden and rudimentary in that genus.

All the *Amycteridæ* are ground-dwellers, being found under logs and stones, while one or two may be obtained from the roots of grass-trees. They are essentially dry-country insects, and seem capable of storing up the vegetable material on which they live, in their abdominal cavities for long periods. In regard to their life-history, we are no further advanced than in Sir William Macleay's day, and nothing is known of the larval or pupal forms of these insects.

The genus *Psalidura* is almost entirely restricted to the eastern colonies, only one species, and that an aberrant one,—*P. perlata*, from Eucla—being described from west of Victoria, though *P. flavovaria* may possibly be from South Australia. In Queensland, New South Wales, and Victoria the genus is widespread, and rich in species, while Tasmania has one representative.

On the whole, the genus seems to prefer the higher mountain ranges and tablelands; and, though specimens are by no means uncommon on the plains, the species represented there are less numerous and more widely distributed. While many of the species are quite local in their distribution, others are spread over wide areas of the country.

History.—The first insect of the subfamily was described by Kirby in 1818, under the name of *Curculio mirabilis*. Kirby has given two figures of his species, but unfortunately while the figure of the insect seems to indicate a member of the *P. impressa*-group, that of the anal excavation shows it to be a member of the "gular-horn-group"; subsequent describers have all described it as having the gular horn, but Kirby himself does not mention it.

The genus *Psalidura* appears to have been created by Fischer von Waldheim for the reception of *Curculio mirabilis* Kirby. Agassiz' "Nomenclator" gives the following reference: *Psalidura* (Macl.) Fisch. v. W., Mém. Soc. imp. Mosc. vi., 1823. On the other hand, Lacordaire and Sir W. Macleay quote W. S. Macleay as the author, (King's Survey, Appendix, 1826). W. S. Macleay has given a very short note on the genus, which he spelt *Phalidura*. Unfortunately I have not been able to see Fischer's paper, and cannot ascertain whether he actually described the genus.

The genus *Amycterus* was created in 1826 by Schönherr; his paper also is not available in Sydney; but the name was long used for all species of *Amycteridæ* except *Acantholophus*. Agassiz' "Nomenclator" gives the reference as follows—*Amycterus* (Dalman) Schönh., Disp. Méth. 1826.

If Fischer actually described *Psalidura*, *Amycterus* will have to be regarded as a synonym; for the present, Lacordaire may be

followed in ascribing to *Amycterus* those species of which *A. Schönherrii* may be taken as the type.

From the time of Fischer and W. S. Macleay, till that of Lacordaire and Sir William Macleay, all the descriptions of species were (with the exception of members of the genus *Acantholophus*) referred to *Amycterus*; these species have since been drafted into various genera, but a few have been placed in Masters' Catalogue under *Psalidura*, and with these I now purpose to deal.

P. granosa Guérin (Voy. de Coquille, ii. (2), 1830).—I have carefully examined the description of this species, which is said to come from Port Jackson, and am of opinion that it should most probably be relegated to *Talaurinus* and possibly as a synonym of *T. bucephalus* Oliv. The following description fits the female of *T. bucephalus* Oliv., or one of its numerous varieties—"le dernier segment de l'abdomen présente au milieu une petite fossette au centre de laquelle il y a un petit tubercule ovale, lisse et luisant." The dimensions given are—long. 17 mill., lat. 7 mill.

Owing to the kindness of Mr. A. M. Lea, I have been permitted to examine the types of most of Boisduval's species, published in 1835 (Voy. de l'Astrolabe, ii.), seven of which are in Masters' Catalogue as *Psalidure*, viz.:—*P. carinata*, *P. crenata*, *P. impressa*, *P. postica*, *P. reticulata*, *P. scabra*, and *P. tuberculata*. *P. carinata* should be referred to *Sclerorrhinus*, *P. scabra* to *Talaurinus*, while *P. tuberculata* is a synonym of *Talaurinus verrucosus* Guér. *P. postica* I cannot recognise, and have not seen the type, but am inclined to think that it is not referable to *Psalidura*.

P. reticulata was described from a female, and will be referred to later on.

P. impressa and *P. crenata* are synonyms, and of the two names I regard *P. impressa* as preferable.

P. mirabunda Gyll., (Schönh., Gen. Curc. ii., p.471, 1834) was unfortunately described from a female, but undoubtedly belongs

to *Psalidura*, and probably to the *P. impressa*-group, if indeed it does not prove to be that species.

Bohemann, in 1843 (Schönh., Gen. Curc., vii.(1)) published descriptions of *Amycteridae*, five of which have been placed in *Psalidura*—*P. d'Urvillei*, *P. Hopei*, *P. mira*, *P. Spencei*, and *P. squalida*. Of these, *P. mira* is a member of the horned-jaw group, and is most probably the species so considered by Macleay; its locality, however, is not Swan River, as recorded by Macleay, but Sydney. *P. d'Urvillei* and *P. squalida*, being founded on female specimens, cannot be recognised with certainty, except by examination of the types. *P. Hopei* should, I think, be referred to *Sclerorrhinus*, on account of the following passages in the description:—"linea frontali laevi, usque ad apicem rostri continuata silaceo-marginata; . . . ; rostrum . . . supra late sed parum profunde bicanaliculatum." *P. Spencei* I cannot recognise, but I do not believe it to be assignable to *Psalidura*.

In the Transactions of the Entomological Society of New South Wales (Vol i., 1865, p 200), Sir William Macleay reviewed the genus, and added twenty new species—*P. abnormis*, *P. caudata*, *P. Coxi*, *P. elongata*, *P. falciformis*, *P. forficulata*, *P. foveata*, *P. Helyi*, *P. Howitti*, *P. Mastersi*, *P. miracula*, *P. mirifica*, *P. Mitchelli*, *P. montana*, *P. rufolineata*, *P. squamigera*, *P. subcostata*, *P. subvittata*, *P. verrucosa*, and *P. Wilcoxi*. Of these names, *P. Helyi* and *P. Howitti* are synonyms of *P. impressa*; *P. mirifica* I have placed as a variety of *P. mira* Boh.; while *P. rufolineata*, though in the present paper maintained as distinct, may come to be regarded as a variety of *P. mirabilis*; in some respects *P. reticulata*, which I have united with *P. mirabilis*, seems intermediate between the two species.

P. decipiens Dohrn, 1872.—I have seen no *Psalidura* small enough to fit the description of this species; tentatively it might be placed near *P. Wilcoxi*.

Since the date mentioned, no new species of *Psalidura* have been described, and although the name *P. mannerheimi* Schön., (Schönh., Mant. Sec. p.55) appears in Masters' Catalogue, it is a

manuscript name only. I have had the species now described as *P. Sloanei*, referred to me under the above name.

In 1904, Mr. A. M. Lea* transferred to *Psalidura* the following species referred by Macleay to *Talaurinus*:—*T. penicillatus* Macl., *T. Riverine* Macl., *T. exasperatus* Erich., *T. morbillosus* Macl.(nec Boisd.), and *T. tomentosus* Boisd. Although these species have the anal forceps present, but hidden, in the male, yet these latter are rudimentary as they are in all *Talaurini*; and in other respects, e.g., the length of the intermediate segments of the abdomen are at variance with *Psalidura*, and I have omitted further consideration of these species in the present paper.

Thus in Masters' Catalogue, the names of thirty-seven species of *Psalidura* appear; of this number I propose to eliminate the names of seven as not belonging to the genus, of five as being synonyms, and of one as a manuscript name only. Of the remaining twenty-four, four are unknown to me, three of them having been described from female specimens. To this number I have added twenty-two new species, making a total of forty-six species. The types of all the new species, with the exception of *P. metasternalis*, are in my own Collection.

In conclusion, I should like to thank the many entomologists who have so kindly helped me in my work, and especially Messrs. Sloane, Lea, Carter, Masters, Rainbow, Illidge, French, and Taylor. To Mr. T. G. Sloane, for his initial incentive to the task in the gift of his own fine collection of *Amycteride*, and under whose guidance the work was begun, I shall ever be deeply grateful. To Messrs. Masters and Rainbow I am indebted for the opportunities afforded me of examining Macleay's types in the Macleay and Australian Museum collections. Mr. A. M. Lea, by permitting me to examine the majority of Boisduval's types, has enabled me to make my work far more complete in that direction than I had hoped. To Mr. H. J. Carter my thanks

* Trans. Roy. Soc. S. Austr. xxviii., p.111.

are due for the manner in which he has encouraged me through many difficulties towards the final completion of my task.

PSALIDURA Fischer.

Fischer v. W, Mém. Soc. imp. Mosc. vi., 1823; W. S. Macleay, King's Survey, ii., Appendix, 1826; Lacordaire, Gen. Col. vi. 1863; W. Macleay, Trans. Ent. Soc. N. S. Wales, i., 1865.

♂. Form elongate-ovate, convex. Clothing variable; setigerous. Head convex, separated from rostrum by a transverse sulcus. Rostrum short, thick, external ridges subparallel, internal ridges convergent posteriorly, base bisulcate, median area depressed anteriorly. Scape long, first joint of funicle longer than second. Prothorax granulate; apical lobe varying in degree of production, ocular lobes feeble. Elytra strongly declivous, apex subtruncate, broadly flanged and mucronate; disc striate, interstices granulate or costiform. Undersurface feebly concave. Third and fourth abdominal segments short, together less than second; fifth deeply excavate, abdominal fascicles almost invariably present. Anal forceps fully developed.

♀. Form more elliptical; mandibles always simple; elytra more evenly rounded, apex more gradually produced, not flanged, and not mucronate; undersurface gently convex, intermediate segments larger than in male, fifth segment not excavated.

Fischer's description of the genus I have not seen. W. S. Macleay gives the following note:—"Obs. The characters of this most singular genus *Phalidura* are chiefly to be found in the broken clavate antennæ, short thick rostrum, connate elytra, and singular anal forceps of the male." Lacordaire and Sir W. Macleay both give generic descriptions, and I have followed the latter in limiting the genus to those species with the forceps fully developed.

To the above generic description I would add the following notes on the anatomy of the sexual and anal organs of the male; of the parts revealed in dissection (though of generic importance) I have made no use in specific descriptions, beyond the shape of the penis. The anal excavation is a deep semicircular depression,

forming in its deepest portion a well defined pit, the preanal fossa; the posterior edge is sinuous, and is produced back between the blades of the forceps. The fascicles vary in size and exact position, but are situated on or near the edge of the excavation. The forceps consist of two blades projecting posteriorly; they are concave on their inner faces, from which spring the blade-like laminæ; these latter and the forceps vary greatly in size. On dissection the inner ends of the forceps are seen to lie in a groove on either side of a projection corresponding to the preanal fossa; to this is attached a median, vertical, chitinous plate, the ends of the forceps being united to this by muscles; also to this plate there is attached a slender curved rod situated asymmetrically on the right side. The penis is hard and chitinous, and varies in the shape of its free extremity. The last two dorsal segments in the male are hard and chitinous; the apical tergite is the longer, is narrowed at the apex, and is overlapped by the broader subapical segment. In the female (as in all *Amycteridæ*) only the last dorsal segment is chitinous.

In the measurements the lengths have been taken from the apex of the rostrum to the apices of the elytra, but, owing to the great convexity of these insects, the total length so taken is often less than the combined lengths of head, prothorax, and elytra. The position in which the head has been set also influences the measurement; while many species present considerable variation in size.

Table of the Species.

Group.

- i. 1(12). ♂ with a strong gular horn.
- 2 (9). Elytral interstices seriate, granulate, none of the interstices costiform.
- 3 (8). Prothorax closely set with small, round granules.
- 4 (5). Elytral sculpture irregular, excepting third and fifth interstices, fourth interstice not continued to base. *P. mirabilis* Kirby.
- 5 (4). Elytral sculpture regular, all interstices reaching base.
- 6 (7). Size moderate, prothoracic granules finer than in *P. mirabilis*.
P. rufolineata Macleay.
- 7 (6). Size large, prothoracic granules not finer than in *P. mirabilis*.
P. Cozi MacL.

- 8 (3). Prothorax more sparingly set with larger granules, elytral sculpture rougher and more coarsely granulate.
P. verrucosa Macl.
- 9 (2). Elytral interstices costiform.
- 10(11). Second interstice only present in apical half, fourth and sixth interstices wanting. *P. cancellata*, n.sp.
- 11(10). Second, third, fifth, and seventh interstices fully costate, fourth and sixth granulate. *P. costipennis*, n.sp.
- 12 (1). ♂ without gular horn.
- ii. 13(26). ♂ with external angles of mandibles each produced into a stout horn.
- 14(25). Interstices costate.
- 15(18). Abdominal fascicles of ♂ very close together.
- 16(17). Anal forceps large, the inner faces looking forwards as well as inwards. *P. miracula* Macl.
- 17(16). Anal forceps smaller, the inner surfaces directly facing. *P. approximata*, n.sp.
- 18(15). Abdominal fascicles separated from one another.
- 19(20). Pronotum not abraded, granules distinct, fascicles small. *P. mira* Boh.
- 20(19). Pronotum abraded, sublævigata.
- 21(24). Elytra widely dilated, fully costate, regularly and deeply foveate, colour shining.
- 22(23). Fascicles large, widely separated. *P. Carteri*, n.sp.
- 23(22). Fascicles small, much closer together. *P. amplipennis*, n.sp.
- 24(21). Elytra more shallowly foveate, opaque. *P. sublævigata*, n.sp.
- 25(14). Interstices granulate, prothorax dilated, finely granulate. *P. subcostata* Macl.
- 26(13). Mandibles unarmed in ♂.
- iii. 27(30). Each elytron with four interstices on disc (including sutural), interstices costiform.
- 28(29). Size large, anal forceps meeting at apex. *P. amplicolis*, n.sp.
- 29(28). Size small, anal forceps not so meeting. *P. sulcipennis*, n.sp.
- 30(27). Each elytron with seven interstices on disc, interstices for the most part granulate.
- 31(78). Anal forceps of varying length, but not hidden, and meeting at apex.
- 32(65). ♂ with inner laminae of forceps not touching nor overlapping.
- 33(64). Prothorax more or less produced in a median apical lobe.
- iv. 34(41). Metasternum with a deep median emargination when viewed from in front, a protuberance on each side of emargination behind middle coxæ.
- 35(36). Blades of anal forceps long, stout, tapering from base to apex. *P. elongata* Macl.

- 36(35). Blades of anal forceps short, strongly arcuate, very thick at base.
- 37(38). Size moderate, sculpture fine and regular.
P. squamigera Macl.
- 38(37). Size much smaller.
- 39(40). Clothing black. *P. montana* Macl.
- 40(39). Clothing maculate, prothorax trivittate. *P. subvittata* Macl.
- 41(34). Metasternum without protuberance on each side of middle line behind middle coxæ.
- 42(59). ♂ with anal forceps long, projecting greatly beyond elytra.
- v. 43(56). Laminae on forceps small, linear, obscured from in front by a fringe of scales.
- 44(45). Elytral interstices costate, sculpture reticulate.
P. Mastersi Macl.
- 45(44). Elytral interstices finely granulate.
- 46(51). Abdominal fascicles situated well within anal excavation.
- 47(50). Forceps widely arcuate.
- 48(49). Elytral sculpture fine, size moderate. *P. forficulata* Macl.
- 49(48). Elytral sculpture rougher, granules large and strong; size larger.
P. Mitchellii Macl.
- 50(47). Forceps stouter, more wedge-shaped. *P. cuneicaudata*, n.sp.
- 51(46). Abdominal fascicles more or less far apart, situated on edge of excavation.
- 52(53). Elytral sculpture regularly reticulate. *P. foreata* Macl.
- 53(52). Elytral sculpture striate, not reticulate.
- 54(55). Form robust, interstices prominent, setæ yellow.
P. flavosetosa, n.sp.
- 55(54). Form not so robust, more finely granulate, setæ dark brown.
P. Frenchi, n.sp.
- vi. 56(43). Laminae small, not linear, situated at extreme base of forceps.
- 57(58). Size moderate, penis pointed. *P. caudata* Macl.
- 58(57). Size for the most part larger, penis obtuse, notched.
P. grandis, n.sp.
- vii. 59(42). ♂ with anal forceps short, not projecting far beyond elytra.
- 60(63). Elytral interstices all finely and distinctly granulate.
- 61(62). Bristles on posterior border of anal excavation continued across middle line; supernumerary tufts yellow. *P. Wilcoxi* Macl.
- 62(61). Bristles not continued across middle, supernumerary tufts black.
P. variolosa, n.sp.
- 63(60). Fourth and sixth interstices alone granulate, the others costate.
P. breviformis, n.sp.
- viii. 64(33). Prothorax truncate in middle line at apex, no apical lobe.
P. metasternalis, n.sp.

- ix. 65(32). ♂ with inner laminae of forceps greatly developed, and meeting at apex or overlapping.
- 66(67). Abdominal fascicles four in number. *P. falciformis* Macl.
- 67(66). Abdominal fascicles two in number.
- 68(69). Fascicles widely separated. *P. kosciuskoana*, n.sp.
- 69(68). Fascicles only moderately far apart.
- 70(75). Forceps greatly thinned beyond insertion of laminae.
- 71(72). Laminae meeting at apex, not overlapping. *P. impressa* Boisd.
- 72(71). Laminae overlapping.
- 73(74). Setae yellowish-red in colour. *P. flavovaria*, n.sp.
- 74(73). Setae black. *P. sloanei*, n.sp.
- 75(70). Forceps very short and obtuse beyond insertion of laminae.
- 76(77). Form robust, laminae overlapping. *P. cultrata*, n.sp.
- 77(76). Form subparallel, laminae meeting at apex, not overlapping. *P. monticola*, n.sp.
- x. 78(31). Anal forceps extremely short, not meeting at apices, which alone are visible; anal excavation shallow.
- 79(82). Abdominal fascicles present, small and situated far apart.
- 80(81). Elytral interstices granulate for the most part in double series. *P. abnormis* Macl.
- 81(82). Elytral interstices granulate for the most part in single series. *P. assimilis*, n.sp.
- 82(79). Abdominal fascicles absent. *P. perlata*, n.sp.

Notes on Table of the Species.—The Roman numerals represent what, in my opinion, may be regarded as distinct groups of species.

Group v.—The inclusion of *P. Mastersi* in this group is somewhat arbitrary; the costate elytra, peculiarly shaped forceps, and the absence of the interforficular process might be sufficient to entitle it to a group of its own.

P. flavosetosa also differs from the typical members of the group in the absence of the interforficular process.

The other members are all extremely closely allied.

Group viii.—*P. metasternalis* occupies an anomalous position; probably further research will show it to be one of a definite group, allied in some respects to the *P. forficulata*-group.

PSALIDURA MIRABILIS Kirby.

Kirby, Trans. Linn. Soc. xii. 1818, p.469, t.23, f.9, a-c; Fischer, Mém. Soc. imp. Mosc. vi. 1823, p.265, f.11; Boisduval, Voy.

Astrolabe, iii. 1835, p. 381; Gyllenhal, Schönh., Gen. Curc. ii. p. 470; Macleay, Trans. Ent. Soc. N. S. Wales, i. 1865, p. 202; ? *P. reticulata* Boisd., Voy. Astrolabe, ii. 1835, p. 384.

♂. Size moderate. Colour black, elytral granules dark red; sparingly clothed with minute greyish scales; fascicles red; nigro-setose. Head large, convex, hidden by prothorax; rostrum short, thick, rather feebly excavate, ridges flattened, basal sulci well marked; mandibles simple; mentum with a strong triangular gular horn. Prothorax (6 × 6 mm.) widest in front of middle, apex strongly produced, collar-constriction faint, median line obsolete, moderately finely granulate, granules rather larger towards sides, setigerous. Elytra (14 × 8 mm.) widest behind middle, rounded on sides; base feebly arcuate, shoulders moderately prominent; apex abruptly rounded, flanged and mucronate; disc irregularly striate, the striæ crossed by numerous transverse rugæ, interstices rather finely granulate in single series, sutural represented by a row of minute granules not thickened at base; second, fourth, and sixth finely granulate, the fourth and sixth rather irregularly so and barely reaching to base or apex; third, fifth, and seventh interstices more prominent, the granules slightly larger and extending from base to apex. Metasternum feebly concave in centre. Anal excavation deep, not quite reaching to anterior margin of the segment, preanal fossa deep, posterior edge sinuous; fascicles widely separated, situated within the excavation. Forceps rather small, transversely widened at base, setigero-punctate, laminae short, apex projecting back. Dimensions: ♂, 20 × 8; ♀, 21 × 9 mm. These are dimensions of a small pair.

Hab.—New South Wales, Sydney, Ryde. Most of the specimens under review without locality, beyond New South Wales.

In ascribing the name *P. mirabilis* to the above species, I have followed the earlier authorities, but I am not convinced of the correctness of the identification. Kirby makes no mention of the gular horn, which he could scarcely have overlooked; and he describes the laminae very fully, but makes no mention of the forceps, "Ex fundo cavitatis laminae duae, latae, compressae, obcu-

neatæ, apice rotundatæ, lævissimæ, glaberrimæ, nitidæ, emergunt." The figure of the anal excavation shows the presence of forceps and laminae (both labelled as laminae), and these structures are of the type met with in the species with a gular horn. The figure of the species is more like that of a member of the *P.-impressa*-group. In the event of such proving to be the case, it would be necessary to name this present species *P. reticulata* Boisd., but until the type can be examined it may be better not to do so.

PSALIDURA RUFOLINEATA W. Macleay, *loc. cit.*, p.203.

♂. Size moderate, of an oblong elongate form, convex. Black, elytral granules red; very sparingly clothed with minute grey scales. Head and rostrum as in *P. mirabilis*, gular horn present. Prothorax (7 × 7 mm.), rounded on sides, widest in front of middle, apex strongly produced; disc feebly depressed, finely granulate, the granules finer and closer together than in *P. mirabilis*, larger at sides and along collar-constriction. Elytra (15 × 9 mm.), feebly rounded on sides, base feebly arcuate, shoulders thickened but not tuberculiform; regularly foveo-striate, foveæ moderately distinct, smaller and closer together, and separated by less conspicuous rugæ than in *P. Covi*; interstices regular, the third, fifth, and seventh more conspicuous and rather more coarsely granulate, tending in places to be duplicated; the others finely granulate, all the interstices reaching to the base, the fourth becoming obsolete posteriorly. Anal excavation deep, the preanal fossa deeply sunken, fascicles widely separated. Forceps strong, slightly longer than in *P. mirabilis*, transverse at base, the laminae not quite meeting, their apices projecting backwards. Dimensions: ♂, 22 × 9; ♀, 20 × 9 mm.

Hab.—New South Wales; Newcastle district, Hunter River (Macleay Museum).

Very close to *P. Covi* and *P. mirabilis*, of either of which it might perhaps be regarded as an extreme variety. The chief points of difference from *P. Covi* are its smaller size, and its finer prothoracic granulation and elytral sculpture. These differences, however, though evident between typical specimens, are less

obvious between the different varieties of the two species. From *P. mirabilis*, it differs in its more regular elytral sculpture, and and slightly longer forceps.

PSALIDURA COXI Macleay, *loc. cit.*, p.204.

♂. Form large, robust, convex. Black, elytral granules black or dull red; sparingly clothed with greyish scales; nigro-setose. Head large, convex, overlapped by prothorax, rostral grooves as in *P. mirabilis*; mandibles simple; gular horn present. Prothorax(9 × 8 mm.) large, evenly rounded on sides, apex strongly produced, collar-constriction faint; feebly depressed on disc, granules rather coarser than in *P. mirabilis* and somewhat flattened. Elytra(17 × 11 mm.) robust, rather feebly rounded on sides, shoulders not prominent; disc regularly foveo-striate, foveæ small, separated by well defined transverse rugæ; interstices prominent, regular, all reaching to base, the fourth not quite reaching apex; the third, fifth, and seventh more prominent, and slightly more coarsely granulate. Anal excavation barely reaching anterior margin, fossa very deep; fascicles widely separated, situated within the excavation. Forceps somewhat larger than in *P. mirabilis*, transversely widened at base; laminae moderately long, almost touching; apex projecting backwards. Dimensions: ♂, 25 × 11; ♀, 25 × 11 mm.

Hab.—Mudgee, Coonabarabran (Macleay Museum); Wollondilly River(Rainbow).

VAR. A.—Differs in being smaller(♂, 22 × 9 mm.), but has the same robust form and the regular elytral sculpture; the transverse rugæ are, however, smaller and not so prominent as in typical specimens.

Hab.—Tamworth(Musson).

VAR. B.—Slightly smaller than the type(♂, 24 × 9.5 mm.), and of a somewhat flatter form; the elytral granules of a light red, tending on the third and fifth interstices to be duplicated. Transverse rugæ low.

Hab.—Blue Mountains, Wolgan Valley(H. J. Carter).

The three foregoing species, *P. mirabilis*, *P. rufolineata*, and *P. Coxi*, form a triad of species so closely allied that, while it is possible to point to outstanding types of each, yet intermediate specimens run each other so close that it is well nigh impossible to clearly define the limits of each.

P. mirabilis Kirby, has the elytral sculpture more irregular and confused, the granules on the intermediate interstices detached from one another, and, as a rule, not continued to the base or apex.

P. rufolineata Macleay, has the elytral sculpture finer than in *P. Coxi*, and more regular than in *P. mirabilis*. The prothoracic granulation also affords a point of distinction; in *P. rufolineata* it is rather finer and closer than in *P. mirabilis*. The forceps are slightly stronger than in *P. mirabilis*.

P. Coxi Macleay.—Typical examples of this species are much larger than those of the other two species, and have the elytral sculpture more regular, the transverse rugæ being much larger, and more prominent; the prothoracic granules are, as a rule, larger than in the other species, but the last feature varies in different specimens, especially in the female. The forceps are larger and stronger than in *P. mirabilis*.

P. reticulata Boisd.—The type is a female, but undoubtedly belongs to this group; unfortunately it is not absolutely possible to refer it either to *P. mirabilis* or to *P. rufolineata*; it has the prothoracic granulation fine, as in *P. rufolineata*, but the elytral sculpture is exactly as in female specimens of *P. mirabilis*, the granules being separate and nowhere duplicated.

While I think it well, for convenience, to retain both *P. rufolineata* and *P. Coxi* as species distinct from *P. mirabilis*; it is highly possible that they should be considered as varieties only.

P. reticulata Boisd., I place as a synonym of *P. mirabilis*, with only a slight degree of hesitation.

The other members of the "gular-horn-group" can be distinguished without trouble, *P. verrucosa* by its extremely coarse prothoracic and elytral granulation, and *P. cancellata* by its peculiar costate elytra. There are, however, several other species

having more or less fully costate elytra, and some of these are closely allied, one of them being described in the present paper as *P. costipennis*.

PSALIDURA VERRUCOSA Macleay, *loc. cit.*, p.203.

♂. Large, robust, convex. Head completely overhung by prothorax; rostrum short, thick, basal grooves deep; mandibles simple, a short gular horn present. Prothorax ($8\frac{1}{2} \times 8\frac{1}{2}$ mm.) angularly dilate on sides, median lobe strongly produced, coarsely granulate, the granules being few in number, large, rounded, and discrete. Elytra (18×11 mm.) evenly rounded on sides, the apex feebly mucronate, humeral angles marked but not prominent, disc longitudinally striate, not definitely foveate, interstices coarsely granulate, granules elongate, feebly flattened, much finer on the sutural interstice, on all the interstices continuous from base to apex; fifth ventral segment widely and deeply excavate, extending to the anterior margin; fossa deep, slightly transverse; fascicles small, situated far apart (4 mm.) within the excavation. Forceps strong, transverse at base, laminae moderately large, apices almost meeting and projecting angularly backwards. Dimensions: ♂, 27×11 mm.

Hab.—Australia (Macleay Museum); New South Wales, Uralla, Armidale (W. W. Froggatt), Walcha (E. W. Ferguson). Type in Macleay Museum.

The coarsely granulate prothorax and elytra will distinguish this species from the other members of the armed-throat group, or indeed from any of the genus. The specimens from New England differ from Macleay's type in being slightly smaller, and in not having all the elytral interstices evenly granulate, *e.g.*, the granules on the second and sixth being wanting at the base, and on the fourth only present on the middle; in my opinion they represent only a variety.

PSALIDURA CANCELLATA, n.sp.

♂. Of an ovoid, elliptical form, convex. Head armed with gular horn; prothorax strongly produced in front and coarsely

granulate. Elytra foveo-reticulate, interstices costate, fourth and sixth obsolete, subsutural wanting in anterior half; fascicles widely separated; forceps transverse. Black, subnitid, sparingly clothed in elytral foveæ with minute cinereous scales. Setæ black, abdominal fascicles dark brown.

Head large, convex, almost completely hidden by prothorax. Rostrum short, thick, separated from head by a transverse sulcus. External ridges parallel, separated from internal ridges by an oblique groove posteriorly. Internal ridges low, separated by median notch. Emargination moderate. Mandibles rounded, inner glabrous portion projecting slightly beyond outer, which is opaque and clothed with long black setæ. Strong gular horn projecting back from mentum, tongue-shaped as viewed from in front, triangular from the side. Prothorax longer than wide (8×7 mm.), broadest in front of middle, rounded to base and apex; median lobe strongly produced, overhanging head; disc somewhat flattened, with a feeble collar-constriction anteriorly and an ill-defined median impression. Coarsely granulate, granules round, feebly flattened, each bearing a minute black seta. Elytra oblong, convex, strongly declivous (15.5×9 mm.). Sides evenly widened from base to behind middle; apex abruptly rounded, mucronate; base slightly arcuate, thickened at shoulders, but not tuberculiform. Striæ three in number, very broad, equal (excepting the apical portion of the first, which is subdivided into two) to the width of two ordinary striæ, transversely foveate, the ridges between the foveæ transverse, wavy, and each bearing two minute setæ. Interstices costate, narrow, prominent, first only present in anterior half, thence turning outwards to form the second or subsutural costa, which is only present in posterior half; third, fifth, and seventh present in entirety, fourth and sixth completely wanting. Sides transversely rugose, with median longitudinal ridge. Metasternum shallowly concave. Fifth ventral segment strongly excavate, the excavation reaching to anterior margin, preanal fossa deep, transverse, marked off in front by an overhanging ridge at the ends of which the widely distant (4 mm.) fascicles are inserted,

posterior edge sinuous, clothed laterally with a fringe of short black hair. Forceps strong, moderately long, widened transversely at base, setigero-granulate, laminae moderately large, almost touching the posterior end projecting backwards. Legs long, tibiae lightly sinuate, clothed with black setae, stronger and thicker on the under surface.

♀. Of a shorter and more oval form than ♂. Head without gular horn; prothorax (7 × 7 mm.) not so strongly produced, and without the impressions on the disc, coarsely and rather sparsely granulate. Elytra (15 × 10 mm.) more rounded on sides, and apex more produced than in ♂. Sculpture as in ♂, except that the foveae are not so well marked, nor so regular. Undersurface convex, third and fourth ventral segments longer, fifth without excavation. Dimensions: ♂, 23 × 9; ♀, 22 × 10 mm.

Hab.—New South Wales: Inverell, Glen Innes (H. J. Carter)—S. Queensland.

PSALIDURA COSTIPENNIS, n.sp.

♂. Elongate-ovate, convex. Gular horn present; prothorax overlapping head, finely granulate; elytral interstices costate, fourth and sixth interruptedly granulate. Black, subnitid; feebly clothed with minute muddy scales, especially in the elytral striae; setae brown; tibiae densely clothed with strong dark-coloured setae.

Head convex, hidden by prothorax. Rostrum short, dilated on sides, ridges rather flat, sulci deep, median notch present, central area depressed in front; head and rostrum setigero-punctate. Mandibles simple; throat armed with a tongue-shaped, coarsely punctate horn projecting back from the mentum. Prothorax (7.5 × 7 mm.) moderately dilate on sides, and strongly produced in front in a median lobe, base truncate; collar-constriction faint, no median line present; disc closely and finely granulate, especially towards centre, the granules setigerous, and with rather a rubbed appearance. Elytra (16 × 10 mm.) strongly rounded on sides, widest beyond middle; apex mucronate, fully flanged; base truncate, humeral angles not marked. Disc convex,

foveo-striate, foveæ deep and regular, slightly transverse; interstices costiform, first only costate at extreme base; second, third, fifth, and seventh prominent, costate, somewhat crenulate; fourth and sixth interruptedly granulate, the granules rather fine and in single series, traceable throughout except on declivity. Sides regularly foveo-striate. Metasternum feebly concave. Fifth ventral segment widely and deeply excavate, extending back to the anterior margin; preanal fossa deep; fascicles large, situated far apart(3.5 mm.), within the excavation. Forceps moderately long, feebly arcuate, not markedly transverse at base; laminæ rather large, directed inwards and just meeting at apex, projecting backwards. Dimensions: ♂, 23 × 10 mm.

Hab.—Queensland: Brisbane(R. Illidge).

Most nearly allied to *P. cancellata*, but abundantly distinct in having all the elytral interstices present in their entirety, and in having the second interstice fully costate. From all other described species of this group, the costate elytra will distinguish it. The prothoracic granulation is finer than in any other of the *P.-mirabilis*-group.

PSALIDURA MIRACULA Macleay, *loc. cit.*, p.205.

A thoroughly distinct species, most closely related to *P. approximata*. Head and rostrum very large, mandibular horns strong and divergent. Prothorax (6.5 × 7.5 mm.) without median lobe, closely, somewhat obsoletely, granulate, median impression rather faint. Elytra(16 × 10 mm.) ovoid, shoulders not produced, apex strongly flanged and mucronate; striate, shallowly foveate, interstices costate, sutural prominent at base, outturned to join third; third and fifth prominent and reaching to base; second not reaching base; fourth not prominent, not extending beyond declivity; sixth and seventh not so prominent. Ventral excavation deep in ♂, reaching anterior margin of fifth segment; preanal fossa transverse, a prominent intermediate ridge running from posterior border to end in front of fossa, but not continuous across middle line; fascicles small, very close together, situated within excavation. Forceps long, curved, inner surfaces looking

forwards as well as inwards; laminæ rather short. *Dimensions* : ♂, 23 × 10; ♀, 23 × 10 mm.

A widespread (New South Wales) species ranging from Mudgee, on the south, to Tenterfield, on the north; also a very common species on the Blue Mountains, and sent to me from Brisbane by Mr. R. Illidge. Type in the Australian Museum.

The strongly curved horns, and closely set abdominal fascicles separate this species from all others of its group, except *P. approximata*; from which, however, the larger, differently set forceps distinguish it.

PSALIDURA APPROXIMATA, n.sp.

♂. Oblong, elongated, convex. Mandibles armed, prothorax finely granulate, elytra reticulo-striate, interstices costate, abdominal fascicles closely approximated, forceps moderately long. Black, opaque, elytral foveæ sparsely cinereo-squamulose; setæ black, fascicles dark red.

Head rather feebly convex, sparsely setigero-punctate. Rostrum short, thick, excavate, external ridges prominent, subparallel, basal impressions strongly marked, median area well defined, sloping anteriorly, emargination moderate; mentum without gular horn. Mandibles large, external angles strongly produced into two curved divergent horns, inner glabrous portion narrow, outer portion opaque, furnished with long black setæ, not extending on to the horns. Prothorax moderately dilated on sides (6 × 7 mm.); sides evenly rounded, widest about middle, base truncate, apex lightly sinuate, not produced in middle, collar-constriction somewhat feebly marked near the sides; disc rather flattened, with an ill-defined median depression, mesial line only traceable posteriorly; finely granulate, granules round, discrete, rather closer together near the centre, unisetigerous. Elytra (15 × 9 mm.) elongate, not greatly wider than prothorax, convex, strongly declivous posteriorly, sides lightly widened from base to behind middle, thence subparallel to apex, apex with moderately large flange, mucronate: base truncate, shoulders marked but not produced: striate, striæ regularly foveo-reticulate; interstices

costiform, third and fifth more prominent than the rest, first outturned at base to join third, obsolete posteriorly; second, fourth, and sixth tending to lose their costiform character and become granulate; fourth ending a little beyond middle. Sides transversely rugate in two rows separated by subcostate interstice. Metasternum shallowly impressed in middle. Fifth ventral segment deeply excavate, excavation steep, not reaching anterior edge; intermediate ridges prominent, ending abruptly in front of the deeply sunken preanal fossa; fascicles very small and close together, situated within the excavation at the ends of the intermediate ridges. Forceps moderate in length, not so long as in *P. miracula*, outer faces rounded, inner sides concave, directly facing one another, with no inclination forwards as in *P. miracula*; laminae moderately large, rounded, fringed at base with dark hair. Legs long, rather thin, densely clothed with black setæ. Dimensions: ♂, 23 × 9 mm.

Hab.—Victoria(?).

I have received from Mr. A. M. Lea a single specimen of this species bearing a label "Victoria(?), F. H. du B." Among the species with armed mandibles, it is most closely allied to *P. miracula* Macleay, but differs in the prothoracic granules, distinct without any tendency to become obsolete, the elytral sculpture more regularly foveate, and the anal forceps shorter and with their inner faces directly facing; the legs, notably the posterior tibiae, thinner and lighter. The abdominal fascicles are rather smaller and more closely set in *P. approximata*. From the other members of the group, the position of the fascicles will separate it.

PSALIDURA MIRA Bohemann.

Bohemann, Schönh., Gen. Curc. vii. (1), p.51; *P. paradoxa* Sturm, Cat. 1843, p.350, t.5, f.3, a-d; var. *P. mirifica* Macleay, Trans. Ent. Soc. N. S. Wales, ii., p.204.

♂. Mandibular horns rather short, not so widely divergent as in *P. miracula* Macleay. Prothorax (5 × 6 mm.) rather feebly rounded, much narrower than elytra, and not produced in front, median line and collar-constriction present; granules fine,

rounded, not abraded. Elytra elongate (14 × 9 mm.), shoulders not produced, striæ regularly foveate, interstices costiform, first only marked at base; third and fifth prominent, reaching to base; second prominent, not reaching base; fourth, sixth, and seventh not so well defined; ventral excavation reaching anterior margin of the apical segment; preanal fossa deep, transverse; fascicles small, situated within the excavation, and moderately close together (1 mm.). Forceps moderately long, feebly curved, laminae short. Dimensions: 20 × 9 mm.

In ascribing the name *P. mira* Bohem., to the above species, I have followed Sir William Macleay; Bohemann's description would, however, apply to most species of this group.

P. mirifica Macleay, is, in my opinion, a slight variety of *P. mira* Bohem.; it is slightly larger (22 × 9 mm.), and has a more subparallel form, the prothorax rather more sparingly granulate, the elytra more parallel-sided, the striæ broader and more deeply foveate, and the interstices not so prominent; the anal excavation is as in typical specimens, but the fascicles are slightly differently set, and the forceps thicker, and more feebly curved than in *P. mira*.

This species is not from Swan River, as recorded by Macleay, but is from the neighbourhood of Sydney, N.S.W. I have *P. mirifica* Macleay, from Conjola, N.S.W.

I have not seen the description of *P. paradoxa*, and know it only from the reference in Masters' Catalogue.

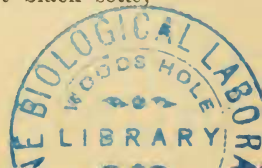
PSALIDURA CARTERI, n.sp.

♂. Of an elliptical-ovate, widely dilated form, convex. Mandibles armed; prothorax granulate, abraded on disc; elytra striate, foveo-reticulate, interstices costate; fascicles large, widely separated, forceps moderately long. Black, shining; sparingly clothed with minute cinereous scales in the elytral foveæ; abdominal fascicles reddish-brown, setæ black.

Head large, not overhung by prothorax, lightly convex, sparingly punctate. Rostrum short, thick, ridges prominent, setigero-punctate, lateral basal sulci deep, median notch present,

median area depressed, emargination moderately deep. Mandibles strong, external angles each produced into a short horn, horns subparallel, outer opaque portion of mandibles densely clothed with long black setæ. Prothorax (6.5 × 7.5 mm.) slightly transverse, sides rounded, widest a little in front of middle, apical median lobe hardly produced, collar-constriction well marked, base truncate; disc feebly convex with a rounded somewhat irregular central depression, median line traceable in its entirety; granulate, granules fine, distinct only at sides behind and in front, elsewhere on disc the granules are completely abraded, leaving a smooth tessellated surface. Elytra (17.5 × 10.5 mm.) oblong-ovate, convex, strongly declivous, much wider than prothorax; sides greatly widened from base to beyond middle, thence subparallel to apex which is abruptly rounded, with a wide corrugated flange, and mucronate; base truncate, humeral angles not produced; disc foveo-striate, foveæ deep, regular, separated by transverse setigerous ridges, interstices prominent, forming seven distinct costæ, first thickened at base and outturned to join the third, less prominent posteriorly; second, third, and fifth most prominent, fourth ending in front of declivity, sixth and seventh not so prominent; costæ with only a few scattered setigerous punctures; sides rugosely corrugate, with an ill-defined central ridge. Metasternum widely and somewhat shallowly concave. Fifth ventral segment deeply excavate, excavation extending to anterior margin, preanal fossa deep, separated from rest of excavation by a well marked intermediate ridge continuous across middle line; posterior edge fringed at sides with black hair; abdominal fascicles broad, widely separated (3 mm.), situated within excavation. Forceps strong, moderately long, gently curved inwards; laminae situated near base, rounded, not meeting, fringed with short black hair along outer side of attachment to forceps. Legs moderately long, tibiæ clothed with black setæ, stouter along the under side.

♀. Of a much smaller, more rotundate-oval form. Mandibles simple, rounded in front; rugulose, and with short black setæ;



head and rostrum as in ♂. Prothorax(5 × 6 mm.) without median line and discal depressions of ♂, abrasion of the granules confined to a few of the central granules which present the appearance of having run together. Elytra almost globulose, widest beyond middle, much wider than prothorax(13·5 × 9·5 mm.); apex rounded, moderately produced; foveo-striate, foveæ regular, deep, interstices equal, well formed, costate. Under surface slightly convex, first ventral segment with shallow oblique impression on either side meeting in front, second segment about length of third and fourth combined, third and fourth longer than in ♂, fifth not excavate, slightly convex, segments two to five all having ill-defined impressions on either side of median line. Legs diluted with red. Dimensions: ♂, 25 × 10·5; ♀, 20 × 9·5 mm.

Hab.—Mt. Kosciusko(H. J. Carter).

The shining black colour, regularly foveate, widely dilated elytra, and abraded prothorax will distinguish this species from most of its allies of the group with armed mandibles. Besides *P. amplipennis*(q.v.), it is most nearly allied, in the abraded prothorax, and broad, widely separated fascicles, to *P. sublevigata*, but in general appearance it is quite unlike that species; from *P. miracula* Macleay, it is still more distinct. I have much pleasure in dedicating this fine species to Mr. H. J. Carter, who discovered it, among other novelties, on Mt. Kosciusko, and to whom I am indebted for much valued advice, and generous encouragement.

PSALIDURA AMPLIPENNIS, n.sp.

♂. Of an elongate-ovate form, convex. Jaws armed, prothorax abraded, elytra foveo-striate, interstices costate, fascicles small, forceps moderately long. Black, shining, sparingly clothed with minute muddy scales in elytral foveæ; nigro-setose; fascicles brown.

Head rather feebly convex, forehead running on to rostrum without break, when viewed from the side; a deep median groove in the forehead not extending to vertex. Rostral ridges well defined, lateral basal grooves deep, median notch present, continuous with linear frontal impression, median area depressed in

front behind marginal plate. Mandibles with external angles produced into two strong divergent horns. Prothorax (6×6.5 mm.) gently rounded on sides, anterior margin sinuous at sides, practically no median lobe; disc depressed in centre, median line somewhat ill-defined; granules abraded in disc, traceable though flattened on sides, along basal margin, and along the position of the collar-impression; setæ minute. Elytra (15×10 mm.), sides rounded, dilated posteriorly, widest behind middle; apical flange prominent, apex mucronate; base truncate, humeral angles rectangular, not produced. Disc foveo-striate, foveæ deep, regular, transverse, separated by well defined transverse costæ; interstices costate, second, third, and fifth most prominent, sutural slightly thickened at base, not joining third; second and fourth showing tendency to be broken up into granules on the declivity, costæ sparingly setigero-punctate. Sides regularly foveate in two striae. Metasternum feebly convex, almost flat. Fifth ventral segment deeply and widely excavate as far forwards as the anterior margin; preanal fossa deep, separated anteriorly by a well defined edge extending across middle line; fascicles small, about 1.5 mm. apart, situated within excavation; posterior edge strongly sinuous. Forceps moderately long, evenly curved, and meeting at apex; laminae small, rounded at apex, and fringed with black hair along outer side. Legs moderately long, nigro-setose. Dimensions: ♂, 22×10 mm.

Hab.—Queensland: Darling Downs (R. Illidge).

Most closely allied to *P. Carteri*, but a smaller species, with the elytral sculpture somewhat different, and differing widely in the size and position of the abdominal fascicles. I am indebted for my unique specimen to the generosity of Mr. R. Illidge, Brisbane.

PSALIDURA SUBLEVIGATA, n.sp.

♂. Elongate-elliptical, convex. Mandibles armed, prothorax granulate, abraded on disc, elytra shallowly foveo-striate, costate; fascicles widely separated, forceps moderately long. Black, opaque, elytral striae sparingly clothed with greyish scales, abdominal fascicles red, setæ black.

Head flattened in front; external rostral ridges continued back to forehead, basal rostral grooves well marked between external ridges, emargination moderately deep. Eyes large, oval. Mandibular horns short, subparallel. Prothorax slightly wider than long (6×6.5 mm.), widest in front of middle, anterior margin sinuous; no definite median lobe, collar-constriction feeble; median line traceable throughout, widened in middle to form a shallow depression; granulate, granules fine, abraded on disc, distinct on sides, behind, and in front. Elytra elongate, much wider than prothorax (15×9.5 mm.), gradually widened to behind middle, thence subparallel to apex; apex abruptly rounded, mucronate; base widely emarginate, humeral angles not produced; disc foveo-striate, foveæ shallow, somewhat irregular, transverse ridges low, not well defined; interstices costate; second, third, and fifth most prominent, sutural thickened and outturned at base to join third; second, fourth, and sixth not quite reaching base, fourth ending in front of posterior declivity. Sides foveo-striate, interstices subcostate. Undersurface: metasternum shallowly concave. Fifth ventral segment deeply and widely excavate, excavation reaching to anterior margin between the fascicles, preanal fossa deep, transverse, marked off in front by a well defined ridge; posterior edge clothed at sides with a fringe of short black hair; fascicles large, broad, moderately far apart (2 mm.), situated within excavation. Forceps strong, moderately long, gradually incurved; laminae rather small, rounded, situated near base, fringed along outer side of attachment with black hair. Legs clothed with black setæ intermingled with lighter-coloured scales on tibiæ; setæ stronger on under side.

♀. Of a shorter, more oval form than ♂. Head and rostrum as in ♂, but mandibles simple, not armed; prothorax (5×5.5 mm.) much less abraded on disc; elytra (13×8 mm.) oval, apex rounded, not mucronate, foveo-striate, foveæ very shallow and irregular, interstices costiform, not so prominent as in ♂; undersurface feebly convex, third and fourth ventral segments longer than in ♂, apical segment simple, not excavate, but with a shallow impression on either side. Dimensions: ♂, 22.5×9.5 ; ♀, 19×8 mm.

Hab.—New South Wales : Mittagong (E. W. Ferguson).

In the abraded prothorax and form of the abdominal fascicles most nearly allied to *P. Carteri*; but, in general appearance, closer to *P. mira*; that species may, however, be distinguished by having the abdominal fascicles closer and much smaller, and by the prothorax not abraded. From *P. Carteri*, its smaller, much less dilate form, and its opaque colour, as well as its differently sculptured elytra will serve to separate it. *P. amplipennis* may be distinguished by its shining colour and differently situated and smaller fascicles.

PSALIDURA SUBCOSTATA Macleay, *loc. cit.*, p.206.

An aberrant member of the *P. mira*-group; in general appearance close to the finely granulate members of the genus. I have retained it in its present group partly on account of the presence of mandibular horns and partly because of the formation of the anal excavation. The horns are short and slightly divergent. Prothorax strongly dilated (6×7.5 mm.) and produced anteriorly in a median lobe, disc feebly depressed, collar-constriction moderate, very finely setigero-granulate. Elytra (13×8 mm.) sub-parallel, shoulders prominent, tuberculiform; longitudinally striate, striæ shallow, separated into foveæ by a row of low granules, interstices finely granulate; first, third, and fifth in double, the others in single series, duplicated in places. Anal excavation reaching to anterior margin, preanal fossa deep, fascicles small, red, moderately close. Forceps short, moderately curved, laminae short. Dimensions: ♂, 20×8 mm.

Hab.—Parramatta.

A rare species. The type, in the Macleay Collection, is apparently somewhat abraded. Other specimens are in the Macleay Museum and Rev. Canon King's Collection.

PSALIDURA AMPLICOLLIS, n.sp.

♂. Elongate-oblong, convex. Prothorax widely dilated, finely granulate; each elytron with three broad sulciform striæ, inter-

stices costate; forceps short, laminae minute, fascicles widely separated. Black, opaque; sulci with very minute sparse grey scales, setae dark brown, fascicles red.

Head large, strongly convex, minutely rugulose, forehead and rostrum sparingly setigero-punctate. Rostrum short, thick, excavate, external ridges prominent, internal short, basal grooves and median notch well marked. Mandibles simple, inner glabrous portion produced into a blunt point. Prothorax (9×9 mm.) widely dilated in front of middle, narrowed to base and apex, median lobe strongly produced, the whole having from above a pentagonal appearance. Disc flat, feebly depressed in centre, with a well defined median line and strongly marked collar-constriction; finely and densely setigero-granulate, granules rather fewer and coarser on sides and about collar-constriction. Elytra oblong, subquadrate (16×9.5 mm.), not much wider than prothorax, gradually widened from base to behind middle, strongly declivous posteriorly; apex rather feebly mucronate, humeral angles prominent, tuberculiform; disc with three broad sulciform striae, transversely and shallowly rugose, with a row of minute setae on either side; interstices four in number, prominent, costiform, strongly setigerous, first represented by a fine row of granules, distinct only at base, the third running out into shoulder. Sides with two rows of large punctures. Metasternum flat, anterior prolongation truncate, feebly impressed. Fifth ventral segment large, strongly excavate; excavation moderately deep, not reaching anterior margin; preanal fossa deep, not separated from rest of excavation; posterior edge slightly raised, sinuous, with a fringe of short stout bristles on either side; fascicles moderately far apart (3 mm.), situated within excavation. Forceps short, apices rather thin, meeting in middle line, greatly dilated at base, with an obtuse projection on inner edge; laminae very small, situated behind projection on inner edge of forceps. Legs long, slender; tibiae lightly sinuous; intermediate tarsi with first joint somewhat dilated, inner side longer than outer, outer edge sinuous; posterior tarsi with first joint strongly dilated on inner side, outer edge almost straight.

♀. Of a shorter, more parallel form than ♂; prothorax (6 × 7 mm.) not dilated on sides, disc convex, with very feeble collar-constriction and median line; elytra (14 × 9 mm.) more contracted posteriorly, not abruptly truncate, sculpture as in ♂, but interstices ending about half-way down declivity; undersurface feebly convex, almost flat; apical segment with a deep round median pit; legs moderately long, tarsi simple. Dimensions: ♂, 23.5 × 9.5; ♀, 22 × 9 mm.

Hab.—Queensland, Dalveen (R. Illidge)—S. Queensland (T. G. Sloane)—New South Wales, Tenterfield (H. J. Carter).

One of the most distinct species in the genus; with the exception of *P. sulcipennis* not close to any I am acquainted with. Apparently it is a common South Queensland insect.

PSALIDURA SULCIPENNIS, n.sp.

♂. Form briefly elongate, subquadrate, convex. Prothorax finely granulate; each elytron with three sulciform striae, interstices costiform; fascicles moderately close; forceps extremely short, not meeting. Black, opaque, sparingly clothed in sulci with minute blackish scales, a patch of grey scales on metasternum and first ventral segment, and another on second ventral segment; setae black; abdominal fascicles black.

Head strongly convex, minutely rugulose, forehead setigeropunctate. Rostrum short, deeply excavate anteriorly, external ridges prominent, internal ridges moderately long, median area strongly depressed, basal grooves deep, median notch small, emargination very deep. Mentum sparingly bearded; mandibles simple. Prothorax transverse (6 × 7 mm.), roundly dilated on sides, median lobe feebly produced; disc flattened, depressed in centre, with well marked mesial groove and collar-constriction; finely granulate, granules discrete, somewhat larger on sides and along collar-constriction, setigerous. Elytra oblong (12 × 8 mm.), wider than prothorax; sides gradually widened to behind middle, strongly declivous, apex broadly flanged, very feebly mucronate; base truncate, shoulders thickened, not very prominent; disc with three broad sulci on each elytron, striae marked with trans-

verse ridges running up on either side on to the interstices; interstices four in number, costiform, becoming granulate on declivity, setigerous in single series; sutural interstice thickened and outturned at base, elsewhere represented by a fine row of granules; third interstice humeral; sides irregularly granulate. Metasternum feebly concave, anterior prolongation rounded. Fifth ventral segment rather shallowly excavate, excavation reaching to anterior margin only in middle line, the margins of the excavation not well defined, preanal fossa present but not sharply marked off from rest of excavation; posterior border fringed across middle line; fascicles moderately close (1 mm.), thin, long, and black, situated on edge of excavation. Forceps extremely short, thick, not meeting at apex, and hardly produced beyond dorsal tergite, laminae narrow, present along inner sides. Apical tergite projecting between forceps, coarsely punctate. Legs densely clothed with black setæ, longer and stouter on under side, tarsal joints not dilated as in *P. amplipollis*.

♀. Head as in ♂, mandibles simple; prothorax subquadrate (5 × 6 mm.), not depressed in centre, with median line fainter; granules somewhat coarser than in ♂, and not abraded; elytra (11 × 8 mm.) more gradually rounded from behind middle to apex; interstices showing greater tendency to granularity, the transverse ridges extending across the sulci; undersurface slightly convex; fifth ventral segment large, not excavate, with a shallow impunctate fovea in centre. Dimensions: ♂, 18 × 8; ♀, 18 × 8 mm.

Hab.—New South Wales, Blue Mountains (Blackheath, Katoomba, Leura).

A short, subquadrate species, belonging, at first sight, to *Talaurinus*, but with all the characters of a true *Psalidura*. The forceps are peculiar, in being very short and stumpy, and not meeting at the apex. It is most closely allied to *P. amplipollis*, from which its smaller size, and different anal appendages will separate it.

PSALIDURA ELONGATA Macleay, *loc. cit.*, p.207.

♂. Densely clothed with greyish scales, varying to brown, setæ dark brown, granules not clothed, unisetigerous, anal hair reddish.

Head strongly convex, rostral ridges not prominent. Prothorax (7×7 mm.) moderately produced, collar-constriction well marked, finely granulate, the granules being finer and closer together in the centre. Elytra (16×10 mm.) elongate, base arcuate, shoulders tuberculiform, striæ somewhat irregular, crossed by numerous low setigerous ridges; interstices irregularly granulate in double series except on fourth and sixth. Metasternum elevated on either side of middle, behind middle coxæ. Anal excavation reaching anterior margin of segment, preanal fossa deep, rounded, the posterior edge of the segment forming a projecting ridge ending abruptly on either side of the fossa; fascicles close together, situated on edge of excavation. Forceps long, evenly curved, tapering from base to apex; penis with the outer angles produced outwards in a curved manner. Dimensions: ♂, 23×10 ; ♀, 23×10 mm.

Hab.—New South Wales: Young, Grenfell, Yass, Monaro, Orange, Narromine.

Type in Macleay Museum.

In general appearance close to *P. squamigera* Macleay, but differing in the anal excavation and forceps. A widespread species over the country lying along, and to the south, of the main Western Line; to the north its place is taken by *P. squamigera*. The more western specimens differ somewhat from the eastern in the shape of the anal excavation; in the more typical specimens (*e.g.*, the Grenfell specimen) the projection downwards of the posterior edge is much more marked than in the western forms (*e.g.*, the Narromine specimen), and the inner ends of the projection come closer together so that the hiatus between is more abrupt, and not so open.

PSALIDURA *SQUAMIGERA* Macleay, *loc. cit.*, p.212.

♂. An elongate, subparallel species, distinctly clothed with muddy-grey scales, the granules not clothed; setæ yellow.

Head convex, rostral ridges defined but not prominent. Prothorax (6×6.5 mm.) evenly rounded on the sides, moderately produced in front, without evident collar-constriction, median

line feeble, densely and finely granulate. Elytra(15 × 9 mm.) subparallel, shoulders prominent, regularly striate, the striæ each with a row of minute granules running down the centre, interstices finely and closely granulate in double series except the fourth and sixth. Undersurface rather deeply concave over the metasternum and first two abdominal segments, the metasternum with a projection on either side behind the middle coxæ. Apical excavation somewhat shallower than usual, the preanal fossa open, posterior edge thickened at base of forceps on each side, fascicles very small and close together, separated by a prolongation forwards of the excavation. Forceps short, strongly arcuate, thickened at the base, the laminæ short but prominent, their apices strongly rounded. Dimensions: ♂, 22 × 9; ♀, 23 × 9 mm.

Hab.—Coonabarabran(T. G. Sloane), Quirindi(Bryant).

Type in Macleay Museum.

Of about the size and general appearance of *P. elongata* Macleay, but readily distinguished by the shorter, more strongly arcuate forceps; the anal excavation is also more open, and the preanal fossa not sharply marked off. It is more closely allied to *P. subvittata* and *P. montana*, from both of which its larger size will distinguish it.

PSALIDURA MONTANA Macleay, *loc. cit.*, p.209.

♂. A small black species, clothed with muddy-brown scales not obscuring the granules; setæ dark brown.

Head small, convex, rostrum not deeply excavate, ridges most prominent at base. Prothorax(5 × 5 mm.) rounded on sides, moderately produced, disc very finely granulate. Elytra subparallel, shoulders slightly thickened, not prominent; striæ crenulate, not definitely foveate, interstices finely and somewhat irregularly granulate in double series except on the fourth and sixth. Metasternum with a tubercle on either side of the middle behind the middle coxæ; excavation shallow, the preanal fossa not separated from the rest of the excavation; fascicles small, close together; forceps small, strongly arcuate; laminæ short,

rounded at apex. Dimensions: ♂, 17 × 7; prothorax 5 × 5; elytra 12 × 7 mm.

Hab.—Queensland. Type in Australian Museum.

Closely allied to *P. subvittata*, from which it differs in having the prothorax more finely granulate, in the elytral granules not obscured by the clothing, and in the colour of the clothing. From *P. squamigera* Macl., its smaller size and finer granulation will separate it.

PSALIDURA SUBVITTATA Macleay, *loc. cit.*, p.211.

♂. A small narrow species, densely clothed with black and grey scales, prothorax trivittate, elytra maculate, the dark patches being more pronounced on either side of the suture, granules clothed; nigro-setose.

Head rather small, inner rostral ridges more prominent at base. Prothorax as long as wide (5 × 5 mm.), the mesial lobe produced, closely and finely granulate except along mesial line. Elytra (12 × 7 mm.) feebly rounded on sides, humeral angles slightly thickened, foveo-striate, interstices not prominent, setigero-granulate in double series except on fourth and sixth, granules obscured by clothing. Undersurface feebly concave. Metasternum with marked projection on either side behind middle coxæ. Fifth segment excavate, the excavation not quite reaching anterior margin; preanal fossa not marked off from rest of excavation; fascicles minute, close together, situated on margin of excavation; forceps small, strongly arcuate; laminae short, apices rounded. Dimensions: ♂, 18 × 7; ♀, 18 × 7 mm.

Hab.—Queensland: Wide Bay, Ipswich, Gympie.

Close to *P. squamigera* Macl., and *P. montana* Macl.; from the first of them, its small size, clothing obscuring the granules, etc., will separate it; from *P. montana*, the nature of the clothing is distinctive.

PSALIDURA MASTERSI Macleay, *loc. cit.*, p.214.

P. reticulata Macl., (nec Boisduval), *loc. cit.*, p.214.

♂. Elongate-ovate; black, shining, nigrosetose.

Mandibles feebly toothed, not produced into a horn; rostral sulci forming a horseshoe-impression encroaching on forehead. Prothorax(6 × 7 mm.) evenly rounded, finely and closely granulate, no median impression, apical lobe feebly produced. Elytra(15 × 8 mm.) evenly rounded on sides, the apex narrower than the base and feebly flanged, basal angles prominent, disc foveo-striate, the foveæ deep and regular, giving elytra a reticulate appearance; interstices costate, all present in entirety, and all equally prominent except the sutural. Anal excavation not quite reaching anterior margin of apical segment; preanal fossa transverse, rather shallow, fascicles small, black, situated well within the excavation, and moderately far apart(2 mm.); forceps long, almost straight, very thin and tapering to a point, laminae linear. Dimensions: ♂, 22 × 8; ♀, 22 × 9 mm.

Hab.—New South Wales: Wellington, Mudgee (Macleay Museum)—Queensland: Ipswich(Macleay Museum).

This insect is of a deep shining black colour, without apparent clothing, and sparingly setose; the elytral sculpture is very regularly reticulate; the long straight forceps are very characteristic, and are unlike those in any other species known to me. The specimen regarded by Sir W. Macleay as *P. reticulata* Boisd., is a female of this species; Boisduval apparently adopted the name from a specimen in the Macleay Collection, but his type, which I have examined, is certainly not the same as *P. Mastersi* Macleay.

PSALIDURA FORFICULATA Macleay, *loc. cit.*, p.210.

Talaurinus incertus Macl., *loc. cit.*, p.221.

♂. A rather short species, densely clothed with scales varying from grey to brown. Prothorax(6 × 6 mm.) strongly rounded on sides, produced in front, and with well marked collar-constriction, finely granulate. Elytra(13 × 8 mm.) subparallel from shortly behind shoulders, shoulders themselves tuberculiform, striae rugose, not definitely foveate; interstices finely granulate in double series excepting the fourth and sixth, granules not clothed. Metasternum rugulose. Anal excavation not extending

to anterior margin of segment; preanal fossa transverse, posterior edge with two lamellar projections between the bases of the forceps; fascicles thin, close together (1 mm.), situated within the excavation; forceps long, feebly curved; laminae linear, obscured by a fringe of yellow scales. Dimensions: ♂, 20 × 8; ♀, 19 × 8 mm.

Hab.—Rockhampton, Dalveen, Queensland. Type in Macleay Museum.

I have carefully examined the type of *T. incertus* Macl., on several occasions; it is, as conjectured by Macleay, a female *Psalidura*. There are several species closely allied, which are found at Rockhampton; and the females of these are hard to distinguish; but I am convinced of the correctness of the above synonymy. From the description, I am of the opinion that *T. phrynos* Pasc., will also prove to be synonymous.

This species may be taken as the type of a large group of species of *Psalidura* located in Queensland, and distinguished by the possession of very long forceps, with laminae linear or apparently absent. The present species differs from all, except *P. Mitchellii* and *P. cuneicaudata*, in having the fascicles situated well within the excavation; the other two are abundantly distinctive in other respects.

PSALIDURA MITCHELLI Macleay, *loc. cit.*, p.210.

♂. Size large, form elliptical-ovate, sparingly clothed with muddy-brown scales, nigro-setose.

Head large, convex, inner rostral ridges most prominent at base. Prothorax rounded on sides, moderately produced in front, collar-constriction well marked, closely granulate, the granules somewhat coarser than in *P. forficulata*. Elytra widely ampliate, width greatest just beyond middle; apex strongly mucronate, base emarginate, shoulders not prominent, striae irregularly crenulate, not definitely foveate; interstices irregular, rather coarsely granulate in double series, except on the fourth and sixth, granules umbilicated, setigerous. Metasternum convex, rugulose. Anal excavation deep, extending almost to anterior margin of segment; preanal fossa transverse, a narrow oblique

groove running along excavation on either side to end anteriorly to preanal fossa, these two grooves not meeting, and not communicating with fossa; fascicles close together, situated within excavation at the inner ends of the oblique grooves; posterior edge with two lamelliform projections between blades of forceps. Forceps very long, feebly arcuate, laminae linear, obscured from view by a fringe of yellow scales; penis bluntly pointed. Dimensions: ♂, 23 × 10; prothorax 7 × 7; elytra 16 × 10 mm.

Hab.—Queensland (Mitchell's Expedition). Type in Australian Museum.

Closely allied to *P. forficulata*; its large size, longer forceps, and coarser granulation will distinguish it. These two species both have the fascicles situated within the anal excavation; several other species have the fascicles further apart, and situated on the margin of the excavation.

PSALIDURA CUNEICAUDATA, n.sp.

♂. Elliptical-ovate, convex. Prothorax finely granulate, elytra striate, interstices finely granulate; fascicles close; forceps stout, moderately long, laminae linear. Black, opaque, densely clothed with fine muddy-yellow scales; fascicles dark brown; setae dark brown.

Head convex, partially concealed, sparingly setigerous. Rostrum short, ridges rather flat, basal impressions not very deep, median notch present, a wide semicircular impression behind marginal plate. Mandibles with outer portion lipped in front. Prothorax as broad as long (7 × 7 mm.), evenly rounded on sides, median lobe moderately produced, collar-constriction feeble, median line traceable at base; finely granulate, granules discrete, rather closer in centre, setigerous. Elytra (15 × 10 mm.) elongate-oval, gently rounded on sides, roundly declivous; shoulders prominent, tuberculiform, apex mucronate; striate, striae shallow, with low transverse ridges, interstices narrower than striae, setigero-granulate, granules fine, arranged in double series, except on fourth and sixth interstices, apical portion of sutural, and apical and basal portions of second also granulate in single series. Sides

irregularly granulate. Metasternum shallowly concave, transversely rugulose. Fifth ventral segment excavate, excavation rather shallow, its limits ill-defined, reaching to anterior border; preanal fossa transverse, sharply separated from rest of excavation; posterior edge produced downwards in centre into a bidentate lamellar process; fascicles short, stout, close together (1 mm.), situated within excavation. Forceps stout, moderately long, triangular on section, with well marked outer border separating an anterior from a posterior surface; lamellæ linear, concealed from in front by border of yellow scales. Legs moderately long, densely clothed with light-coloured setæ, intermingled with others of a darker hue.

♀. Of a more rounded oval form than ♂; mandibles simple; median prothoracic lobe not quite so marked (6×7 mm.), and median line absent; elytra (15×9 mm.) more rounded on sides, apex more gradually produced, mucronate, shoulders not so prominent, sculpture as in ♂; ventral segments convex, third and fourth longer, fifth without excavation. Dimensions: ♂, 22×10 ; ♀, 21×9 mm.

Hab.—Charters Towers, Queensland.

Close to *P. forficulata*, but separated by the shallower anal excavation, and rather stouter fascicles; the forceps also are thicker, and have little of the sickle-shaped form characteristic of *P. forficulata* and *P. Mitchellii*.

PSALIDURA FOVEATA Macleay, *loc. cit.*, p. 213.

♂. Form ovate, strongly dilate posteriorly, convex. Prothorax (6×6.5 mm.) finely granulate, much narrower than elytra, apical lobe strongly produced, collar-constriction feeble; elytra (14×10 mm.) rounded on sides, tuberculiform, deeply foveate, interstices irregular, granulate in double series, granules also present between the foveæ; metasternum feebly convex, rugosely punctate; anal excavation reaching to anterior margin of segment, preanal fossa deep, transverse, marked off from rest of excavation, fascicles small, moderately far apart (2 mm.), situated on the

edge of the excavation, posterior edge bearded between bases of the forceps; forceps moderate in length, slightly curved, laminae linear. Dimensions: ♂, 20 × 10 mm.

Hab.—Queensland(Macleay Museum).

The very broad, deeply foveate form of this insect is quite distinctive. From *P. forficulata*, besides shape and elytral sculpture, the more widely separated fascicles will distinguish it. It is closely allied to *P. flavosetosa*, but the elytral sculpture is very different; while *P. flavosetosa* is a much larger, robust insect. *P. Frenchi* differs in the elytral sculpture. The unique type in the Macleay Museum is the only specimen of the male I have seen; a female in the same Collection bears a label "Swan River," but this is evidently erroneous.

PSALIDURA FRENCHI, n.sp.

♂. Elongate, convex. Prothorax finely granulate; elytra striate, interstices finely granulate; fascicles moderately far apart; forceps long, laminae linear. Black, opaque, densely clothed with minute brown scales, interspersed with lighter-coloured patches along the sides, scales on underneath parts yellowish in colour; granules not clothed, each bearing a stout, decumbent, dark brown seta; fascicles black.

Head convex, to a great extent covered by prothorax, densely clothed and setigero-punctate. Rostrum short, thick, deeply emarginate in front; basal sulci short but well marked, median area almost linear. Mandibles with the hirsute portion strongly lipped. Prothorax(6 × 6 mm.) evenly rounded on sides; apical lobe moderately produced, base truncate; collar-impression definitely marked, median line faint at base and apex; disc feebly convex, finely setigero-granulate, the granules finer and closer together towards the centre. Elytra(14.5 × 9 mm.) evenly rounded on sides; apex abruptly rounded, flanged and strongly mucronate; base truncate, humeral angles marked by a small nodule, not very prominent. Disc foveo-striate, foveae small, shallow, somewhat irregular, each separated by a setigerous granule; interstices not very prominent, finely and rather irregularly granulate, sutural in

single series duplicated at base; second, fourth, and sixth in single series, becoming double in the middle; third, fifth, and seventh more prominent, and in double series. Sides with interstices irregularly granulate. Metasternum shallowly concave, rugosely punctate. Anal excavation deep but with sloping sides, reaching not quite to anterior margin of the segment; preanal fossa deep, transverse, well marked off; posterior margin projecting downwards as a bifid process between the blades of the forceps; fascicles thin, black, moderately far apart (2 mm.), situated on the edge of the excavation. Forceps very long and arcuate, about 7.5 mm. long in external measurement; laminae linear, obscured from in front by a thick fringe of yellow scales. Legs moderately long, feebly sinuous.

♀. Of a more rounded oval form; mandibles simple; prothorax (6 × 6 mm.) with median lobe not quite so produced; elytra (14 × 8 mm.) more rounded, and the apex more gradually produced, sculpture as in male; underneath parts feebly rounded, minutely rugulose, last segment not excavate and entirely without impressions. Dimensions: ♂, 22 × 9; ♀, 21 × 8 mm.

Hab.—Queensland, Rockhampton (C. French).

In appearance very close to both *P. forficulata* and *P. Mitchellii*, but differing from both in having the fascicles further apart, and differently situated. *P. flavosetosa*, with which it is associated in the table of species, is a much more robust insect, with rougher elytral sculpture, differently coloured setae, etc. I have much pleasure in dedicating this species to Mr. C. French, to whom I am indebted for many specimens of Amycteridæ.

PSALIDURA FLAVOSETOSA, n. sp.

♂. Of an ovoid, robust form, convex. Prothorax finely granulate; elytra irregularly striate, interstices granulate; fascicles far apart, forceps very long, laminae linear. Of a dull black colour, rather densely clothed with muddy-yellow scales; setae pale yellow; fascicles reddish-brown. Funicle, club, tibiae, and tarsi densely clothed with pale setae intermingled with stronger darker ones.

Head large, strongly convex, sparingly setigero-punctate. Rostrum short, wide, excavate, internal ridges short, basal impressions deep and with median notch, median area strongly depressed in front. Mandibles densely clothed with long light-coloured setæ, outer portion lipped. Prothorax transverse (7×8 mm.), evenly rounded on sides; median lobe briefly produced, collar-constriction faint, no median line; densely granulate, granules discrete, rounded, rather smaller and closer in the centre, each with a single stout yellow seta. Elytra ovate, strongly declivous (17×10.5 mm.), evenly rounded on sides, broadest about middle; base widely emarginate, shoulders slightly produced; apex broadly flanged, mucronate. Disc striate, striæ irregular, shallow, crossed by transverse setigerous ridges; interstices convex, broad, irregular, granules umbilicated, setigerous, first interstice in single series except at base where it is doubled; other interstices in double series, tending in places to be in triple series; fourth interstice in single series at base and apex. Sides irregularly granulate. Metasternum shallowly and widely impressed, rather densely clothed with yellow setæ. Fifth ventral segment deeply excavate, excavation not reaching anterior margin; preanal fossa deep but not sharply marked off from rest of excavation; posterior edge fringed at base of forceps with short yellow hair; fascicles short, moderately widely separated (3 mm.), situated on edge of excavation. Forceps long, stout, feebly curved; laminae very small, linear, hidden from in front by a fringe of short yellow scales. Apical tergite bicornuate. Legs moderately long, tibiae feebly curved. Dimensions: ♂, 26×10.5 mm.

Hab.—Victoria.

Though a member of the *P.-forficulata*-group, it is not close to any other species known to me. I have placed it in the table next to *P. Frenchi*, but its elytral sculpture will distinguish it from that species. From *P. forficulata*, it differs in its much more robust form, much coarser elytral sculpture, and in the abdominal fascicles. The absence of the bifid interforficular process will also serve to distinguish this species among the granulate members of this group.

PSALIDURA CAUDATA Macleay, *loc. cit.*, p.210.

♂. Densely clothed with scales varying from grey to yellow and brown, granules shining, conspicuous; setæ yellow. Prothorax (6.5 × 7 mm.) rounded, apical lobe moderately produced, collar-constriction marked; finely granulate, granules discrete, closer and finer in the centre. Elytra (15 × 10 mm.) widest towards apex, humeral angles prominent, striæ shallow, an irregular row of granules running along the bottom of each stria; interstices finely and irregularly granulate, the granules being in single series on the fourth and sixth, and in double series on the first, second, third, fifth, and seventh interstices. Ventral apical segment deeply and broadly excavate; preanal fossa deep, rounded; fascicles small, situated on the margin of the excavation, close together. Forceps extremely long, very feebly curved; laminae extremely short, and situated at extreme base; interforficular process strongly hirsute; penis pointed. Dimensions: ♂, 22 × 10; ♀, 22 × 9 mm.

Hab.—Queensland. Type in Macleay Museum.

A common South Queensland insect, very closely allied to *P. grandis*; the points of difference have been pointed out in reference to that species, but, apart from mere size, it is almost impossible to separate the two species on external appearances; there is also some considerable variation in size in both species, and without dissection of the penis, which may be readily done, I cannot succinctly point out the differences.

Specimens received from Mr. R. Illidge measure, ♂, 25 × 10 mm.

PSALIDURA GRANDIS, n.sp.

♂. Elliptical-ovate, convex, size large. Prothorax finely granulate; elytra striate, interstices irregularly granulate; fascicles close; forceps very long, laminae small. Black, opaque; densely clothed with fine pubescence varying in colour from white to yellow and brown; setæ yellowish-brown, fascicles and anal hair reddish.

Head broad, strongly convex, slightly overlapped by prothorax. Rostrum short, wide, ridges somewhat flattened, basal grooves

rather shallow. Mandibles with outer opaque portion clothed with yellowish setæ, and produced anteriorly to form a prominent lip. Prothorax rounded, subglobular (7.5×8.5 mm.); median lobe feebly produced, collar-constriction well marked; disc with three lines of yellow scales, the median one most marked; granulate, granules fine, rounded, discrete, setigerous. Elytra (18×11 mm.) gently rounded on sides from behind shoulders, apex abruptly rounded, mucronate; base widely emarginate, shoulders prominent, tuberculiform. Disc irregularly and shallowly foveostriate, foveæ separated by irregularly placed granules; interstices rather broad and ill-defined, finely granulate, granules prominent and shining, umbilicated, each puncture bearing a yellow seta, arranged in double series excepting on the fourth and sixth interstices, where they are in single series; sutural interstice irregular, only distinct in basal half. Sides irregularly granulate. Metasternum shallowly impressed in middle, sides slightly raised, transversely rugulose. Ventral segments: fifth large, deeply excavate, excavation not reaching anterior margin; preanal fossa deeply sunken, sharply marked off; posterior border fringed with short red hair; fascicles short, close together (1 mm.), situated just within excavation; interforficular processes of fifth segment and apical tergite meeting and supporting a tuft of reddish bristles. Forceps very long, arcuate; laminae small, rounded and situated at extreme base; penis rounded and notched at apex. Legs moderately long, densely clothed with yellow hair intermingled with dark setæ.

♀. Of a more rounded and shorter form than ♂. Mandibles simple, head and prothorax (7×8 mm.) as in ♂; elytra ovate (17×10.5 mm.), regularly and gradually rounded on sides, apex mucronate; sculpture and clothing as in ♂; ventral segments convex, third and fourth larger, fifth not excavated. Dimensions: ♂, 27×11.5 ; ♀, 25×10.5 mm.

Hab.—South Queensland; Daandine (T. G. Sloane)—New South Wales: Coonamble, Kiacatoo (T. G. Sloane); Moree, Galston (A. M. Lea).

Closely allied to the preceding species, from which, however, I regard it as distinct; the size is, as a rule, larger than that of *P. caudata*, and the form relatively more robust. The chief differences, however, lie in the sexual characters of the male; in *P. grandis* the preanal fossa is rather deeper, and the blades of the forceps more arcuate in form, so that the space between the blades is wider than in *P. caudata*, in which the blades are more nearly parallel; the penis in *P. caudata* is sharply pointed, while in *P. grandis* it is rounded, and with a distinct notch in the apex. For obvious reasons I have not been able to dissect out the penis in the type-specimen of *P. caudata*, but I do not think I am wrong in my identification.

PSALIDURA WILCOXI Macleay, *loc. cit.*, p.209.

♂. A short, almost parallel-sided species, the smallest known to me; sparingly clothed with greyish scales, setæ stout, dark brown.

Head convex, rostrum rather narrow between the ridges, the sides strongly dilated, mandibles lipped. Prothorax (5 × 5 mm.) rounded on sides, moderately produced in front, collar-constriction slight, finely and closely granulate. Elytra (11 × 7 mm.) gently rounded on sides, shoulders prominent; striate, irregularly foveate, interstices setigero-granulate in single series on the first, second, fourth, and sixth; in double on the third, fifth, and seventh, the granules both here and on prothorax strongly umbilicated. Fifth abdominal segment widely excavate, excavation not quite reaching the anterior margin, but coming close to the sides anteriorly, rather shallow at the sides but deep in the middle, preanal fossa being not sharply marked off; fascicles moderately far apart (2 mm.), situated on anterior margin of excavation; posterior border strongly bearded with a fringe of black bristles, an intermediate row of red bristles situated midway between the posterior row of bristles and the anterior margin; forceps short, very stout at base, laminæ obliquely set on inner surfaces of the blades, their apices almost meeting. Dimensions: ♂, 17 × 7 mm.

Hab.—Clarence River(Macleay Museum)—Queensland : Killarney(R. Illidge). Type in Macleay Museum.

Closely allied to *P. variolosa*, but differing in the anal excavation. There is a species from Walcha, N.S.W., in my collection, which may be a variety; it differs in having the fascicles rather closer together, the intermediate bristles not so widely separated from the posterior row, and of a black colour.

PSALIDURA VARIOLOSA, n.sp.

♂. Of a short, subparallel form, convex. Prothorax finely granulate; elytra foveo-striate, interstices granulate; fascicles moderately far apart, forceps and laminae rather small. Black, opaque, rather sparingly clothed with minute greyish scales; mandibles, sides of metasternum, and first and second ventral segments more closely clothed with yellow scales; legs rather densely clothed with white scales interrupted with dark setae; setae dark brown; fascicles dark brown, anal hair black.

Head convex, partially concealed, setigero-punctate, median groove present in front. Rostrum short, ridges somewhat flattened, basal impressions well defined, median notch present; deeply excavate in front, emargination deep, sides strongly dilate; mentum not noticeably thickened in middle, sparingly bearded; mandibles with outer portion lipped in front and densely clothed with short yellow scales interspersed with longer darker hairs. Prothorax as wide as long(6 × 6 mm.), widest about middle, evenly narrowed to base and apex; median lobe strongly produced; collar-constriction moderately marked above, median line faintly impressed near base, also a faint impression near lateral basal angle; finely granulate, granules rather smaller in centre, each with a large setigerous puncture. Elytra oblong(12 × 8 mm.), lightly rounded on sides, widest behind middle, strongly declivous; apex mucronate, flange small; base arcuate, shoulders prominent; irregularly striate, striae very uneven, shallowly foveate; interstices granulate, granules fine, strongly umbilicated, each puncture bearing a stout seta, first interstice in double series at base; second, third, and fifth tending to be double in places, otherwise

the granules are arranged in single series; sides irregularly granulate. Metasternum shallowly concave, almost flat. Fifth ventral segment deeply and widely excavate, excavation not quite reaching anterior margin; preanal fossa deep, transverse; intermediate ridges with short black bristles obscured by the longer setæ upon the posterior edge, these latter not extending across the middle line; fascicles small, moderately widely separated (3 mm.). Forceps small, laminae obliquely placed along inner side of blades, a tuft of hair projecting downwards from apical tergite between the blades.

♀. Of a more elliptical form than ♂; median prothoracic lobe not so strongly produced, collar-constriction fainter; elytra more gradually rounded to apex, which is not mucronate; shoulders prominent, foveo-striate, foveæ shallow, irregular, interstices granulate, with the exception of the fourth and sixth in double series; ventral segments convex, third and fourth longer than in ♂, fifth not excavate. Dimensions: ♂, 19 × 8; ♀, 19 × 8 mm.

Hab.—South Queensland: Darling Downs (Hermann Lau)—New South Wales: Inverell.

Close to *P. Wilcoxi*, but differing in its larger size and coarser granulation, the intermediate bristles in the anal excavation black and obscured by the posterior row, and in these latter not extending across the middle line.

PSALIDURA BREVIFORMIS, n.sp.

♂. Of a short, convex form, strongly declivous. Prothorax finely granulate, elytra foveo-striate, interstices costate; fascicles widely separated; forceps small, laminae rather small. Black, subnitid, with minute greyish scales barely traceable in foveæ; legs diluted with red, somewhat densely clothed with short grey pubescence and dark setæ; nigro-setose; fascicles reddish-brown.

Head convex, partially concealed, setigero-punctate, marked with a deep linear impression in front. Rostrum short, thick; ridges well defined, basal impressions very deep, median notch present; central area deeply sunken in front, emargination deep;

mentum thickened and coarsely punctate in middle; mandibles with outer portion produced in front to form a prominent lip. Prothorax slightly longer than wide (7×6.5 mm.), regularly rounded on sides, median lobe prominently produced; collar-constriction rather feebly marked above, median line traceable only posteriorly; finely granulate, granules rounded, rather strongly setigero-punctate. Elytra (13×8.5 mm.) short, widened from shoulders to behind middle, thence subparallel to apex, strongly declivous posteriorly; apex mucronate, base widely emarginate, humeral angles marked but not produced; disc with six longitudinal striæ, striæ foveate, the foveæ rather shallow and irregular but better marked in the lateral striæ; interstices raised, costiform, somewhat wavy in course, setigerous; sutural interstice only costiform at base, second costiform in middle, becoming granular at base and on declivity, third and fifth prominent and costate throughout, fourth and sixth not prominent, represented each by a row of granules, seventh costate; sides irregularly seriate-foveate. Metasternum with a wide median depression, laterally somewhat raised and convex. Fifth ventral segment widely excavate, the excavation wide, deep, short from before backwards, and reaching anterior margin; preanal fossa deep; intermediate ridges well marked, running from posterior border at extreme edge to the side of the fossa, and bearing a row of black hairlike bristles projecting downwards and backwards, posterior edge also clothed laterally with a fringe of longer bristles projecting downwards, and obscuring the intermediate row; fascicles small, and widely separated (3.5 mm.). Forceps rather short, moderately curved, clothed with black setæ; laminae rather small, downturned, situated obliquely along base of inner surface of blades, so as to be almost hidden from below. Dimensions: ♂, 19×8.5 mm.

Hab.—Glen Innes(H. W. Brown).

In its short ampliate form, this species approaches to *P. variolosa* and *P. Wilcoxi*. In its widely excavate fifth ventral segment, strongly hirsute posterior border and intermediate ridge it also

closely resembles those two species; from both, however, its costate elytra and black shining colour will distinguish it.

P. DECIPIENS Dohrn; Dohrn, Stett. Ent. Zeit. 1872, p.143.

“Oblongo-elliptica, fusca, in cavitatibus brunneo-squamulosa, thorace rotundato, in medio ampliato, confertim tuberculato, apice nonnihil producto, elytris porcatis, costis tuberculorum nigrorum seriebus, humeris tuberculo majore insignitis, ad suturam mucronatis.”

“♂. Elytris apice sensim ampliatis, ventre subtus apice excavato, ano forcice validissima armato.”

“Long.corp.(rostrum excluso) 12-13 millim. Lat. 4-5 mill. Long. forcicis 4-5 mm.”

“♀. Elytris ovalibus, versus apicem haud ampliatis, segmento anali inermi.”

“Patria : Australia orientalis.”

The above is Dohrn's description of the species; the size given prohibits my regarding it as any of the species before me; while in the description there is not sufficient to enable me to assign it to any group. I have placed it near *P. Wilcoxi* merely because that is the smallest species known to me; but the length of the forceps quoted, would indicate a very different species.

PSALIDURA METASTERNALIS, n.sp.

♂. Elongate, subparallel; prothorax minutely granulate, elytra foveo-striate, interstices thickly granulate; fascicles widely separate. Black, opaque; clothed with muddy scales in the depressions; setæ black.

Head convex, somewhat thickly setigero-punctate, punctures extending on to rostral ridges. Rostrum short, thick, flat posteriorly, shallowly excavate at apex; ridges flattened; basal sulci rather feeble, median notch deep, extending anteriorly to form a Y-shaped depression behind marginal plate. Mandibles rounded, slightly produced in front. Prothorax(7.5 × 8 mm.) rotundate, evenly rounded from base to apex, base truncate, apex truncate above, feebly sinuous at sides, no definite median or ocular lobes; collar-constriction faint, median line feeble; disc densely and

minutely granulate, the granules contiguous, somewhat flattened, each bearing a decumbent black seta. Elytra (16 × 10 mm.), sides parallel in middle, slightly rounded to shoulders and feebly narrowed in front of apex; humeral angles not produced; foveostriate, the depressions shallow but separated by distinct cross reticulations, interstices densely granulate, granules presenting an abraded appearance, setæ arising from posterior aspect; sides obsoletely rugulose, with small, rather sparse, setigerous granules. Metasternum widely concave, lateral margins produced into a strong tubercle projecting beyond level of middle coxæ. Apical excavation deep, sides vertical, the preanal fossa not well marked off from rest of excavation; position of fascicles taken by two small tubercles widely separated (3 mm.), situated on the edge of the excavation. Forceps strong, moderately long, rather clumsily shaped; laminæ small, not visible with forceps in position. Anterior and middle tibiæ each bearing small granules on under-surface distal to the middle; middle tibiæ feebly excavate beyond the last granule; posterior tibiæ long, thin, and sinuous. Dimensions: ♂, 24 × 10 mm.

Hab.—Hunter River, N.S.W. Type in Macleay Museum.

A remarkable species not close to any known to me; the form of the metasternum would apparently ally it to *P. abnormis*, but the length of the forceps is entirely at variance with any of the species of that group; the linear laminæ would place it in the group of which *P. forficulata* is the type, but it is a species 'sui generis.' The only specimen known to me is the type in the Macleay Museum, but it is so distinct that I have no hesitation in describing it.

PSALIDURA FALCIFORMIS Macleay, *loc. cit.*, p. 213.

♂. Black, nigro-setose. Head convex, rostrum short, the ridges flattened, mentum toothed, bearded; prothorax (6 × 6 mm.) rounded, moderately produced in front, finely granulate; elytra (14 × 8 mm.) evenly rounded, shoulders not prominent, striæ regular, transversely ridged, almost foveate, interstices finely granulate, the second, fourth, and sixth in single series, the first,

third, fifth, and seventh in double series; the granules shining, each with a long seta projecting posteriorly; metasternum concave, anteriorly on a level with middle coxæ; ventral excavation deep, the edges almost vertical; preanal fossa obscured from view by the laminae; abdominal fascicles spread out along the margin of the excavation, roughly collected into two groups on each side, the two inner groups about 1 mm. apart; forceps long, very thin, and sickle-shaped, being turned on themselves near the apex, the laminae very long, broad, and bent inwards, their apices overlapping for a considerable distance. Dimensions: ♂, 20 × 8.5 mm.

Hab.—New South Wales: Mudgee, Coonabarabran (Macleay Museum). Type in Australian Museum.

A member of the *P. impressa*-group, it may be distinguished from all its allies by the abdominal fascicles being arranged in four bundles instead of two; the forceps also are longer, more incurved and twisted on themselves than in any other of the group; it is probably most closely allied to *P. Sloanei* and *P. flavovaria*.

PSALIDURA KOSCIUSKOANA, n.sp.

♂. Oblong-elongate, convex. Prothorax finely granulate, elytra striate, interstices thickly and finely granulate; fascicles widely separated; forceps short, concealed; laminae very long, meeting at apex. Black, opaque, granules shining, legs diluted with red; setae black; fascicles red.

Head convex, densely setigero-punctate, a single punctiform depression in centre of forehead. Rostrum short, ridges rather flattened, setigero-punctate; basal grooves narrow, rather shallow, median notch present, median area deeply sunken anteriorly, emargination deep. Mentum bearded in centre with a tuft of long black bristles, dentate anteriorly. Mandibles simple, outer portion nigro-setose. Prothorax (7 × 7 mm.) rounded on sides, widest in front of middle, median lobe feebly produced; disc feebly flattened in centre, collar-constriction faint, no median line; finely and densely granulate, granules contiguous, rather denser in centre, each punctate and bearing a long black seta.

Elytra(16 × 8 mm.) elongate, uniformly and gently rounded from base to apex, strongly declivous posteriorly; apex abruptly rounded, obtusely mucronate; base arcuate, shoulders tuberculiform, regularly and deeply striate, striæ transversely ridged, not definitely foveate; interstices regular, narrower than striæ, granulate in double series, becoming triple in some places, granules rounded, shining, nigro-setose; sutural interstice consisting of a single row of granules, and along the inner side of this a double row of much finer granules. Sides irregularly granulate. Metasternum transversely concave, raised anterolaterally in the form of two ridges separated in the centre, and ending abruptly laterally. Fifth ventral segment deeply excavate, excavation reaching to anterior margin; preanal fossa transverse, hidden; posterior edge clothed laterally with short black hair; fascicles widely separated(4 mm.), situated on edge of excavation. Forceps extremely short, concealed by elytra, concave on ventral aspect, from which spring the laminae, these latter very long, and widely rounded at apex, meeting but not overlapping. Legs moderately long, feebly sinuous, clothed with stout setæ, intermingled with a few paler scales. Dimensions: ♂, 22 × 8 mm.

Hab.—New South Wales: Jindabyne(H. J. Carter).

This species was among the *Amycteridae* brought back from Mt. Kosciusko, by H. J. Carter. It belongs to the *P.-impressa*-group, but may be distinguished from that and all other members of the group by the widely separated abdominal fascicles. The black colour of the derm, not obscured by scales, and the shiny granules give it a very characteristic appearance.

PSALIDURA IMPRESSA Boisduval.

Psalidura impressa Boisd., Voy. Astrolabe, ii., p.375, t.7, f.10; Macleay, *loc. cit.*, p.208; *P. crenata* Boisd., *loc. cit.*, p.385; *P. Helyi* Macleay, *loc. cit.*, p.213; *P. Howitti* Macleay, *loc. cit.*, p.211; *P. mirabunda* Macleay (nec Gyll.), *loc. cit.*, p.207.

♂. Elongate, subparallel, convex; densely clothed with scales varying in colour from grey and yellow to black, prothorax indistinctly trivittate, elytra maculate, setæ pale yellow. Rostral

ridges somewhat flattened, the grooves not deep; mentum dentate anteriorly. Prothorax (7×7 mm.) widely rounded on sides, anteriorly produced to a moderate extent; finely and closely granulate. Elytra (15×9 mm.) not much wider than prothorax, feebly rounded on sides, humeral angles thickened but not prominent; striæ transversely crenulate, hardly definitely foveate, interstices finely and closely setigero-granulate; the first, third, fifth, and seventh in double, the others in single series (in some specimens all the interstices are granulate in double series). Metasternum concave, anteriorly raised to level of middle coxæ. Anal excavation deep, the sides vertical, preanal fossa deep and hidden; fascicles moderately far apart (2 mm.), situated on the edge of the excavation. Forceps rather short, slender towards apex; laminae long, straight, broad at base and tapering towards apices, which are rounded and do not overlap. Dimensions: ♂, 22×9 ; ♀, 22×9.5 mm.

Hab.—Victoria: Melbourne, Fern Tree Gully—Tasmania.

I have examined the types of *P. crenata*, *P. Helyi*, and *P. Howitti*, as well as the one Macleay doubtfully referred to *P. mirabunda*, and cannot distinguish them from the Tasmanian species, *P. impressa*, which can be confidently identified from the description and figure. The continental specimens differ slightly in being, as a rule, smaller and narrower; but in all other particulars, and in the arrangement of the sexual organs of the male, they are identical.

PSALIDURA MIRABUNDA Gyllenhal.

Gyll., Schönh., Gen. Curc. ii., p.471; Bohemann, Schönh., Gen. Curc. vii. (1), p.52; Boisd., Voy. Astrolabe, ii., p.377; Macleay, *loc. cit.*, p.207.

I am quite unable to identify this species from description, the species being originally described from a female. Bohemann described the male, but his description is so short as to be worthless. The species identified doubtfully by Macleay as *P. mirabunda* is the same as *P. impressa* Boisd.

The following excerpts from the description would seem to indicate a species of the *P.-impressa*-group:—"Oculi subovati."
 "Thorax latitudine medii non longior, rotundatus; antice leviter bisinuatus, lobo medio parum producto." "Elytra . . . angulo humerali prominulo, tuberculato; . . . supra convexa, obsolete transversim rugulosa et adhuc obsoletius striato-punctata, interstitiis alternis elevatioribus, subcostatis, omnibus subtilius seriatim tuberculatis, . . ."

The species named by me *P. cultrata*, has been sent out from the Brussels Museum under the name of *P. mirabunda* Gyll. There is, however, no means of knowing how this identification was arrived at, and there are several points about the clothing which are laid stress upon in the description, and which are at variance with *P. cultrata*:—"Thorax . . . tuberculis . . . poro et seta declinata, pallida, instructis." "Elytra . . . tuberculis poro et seta pallida instructis; nigro-fusca, opaca, in cavitatibus parce cinero-squamulosa."

In *P. cultrata* the setæ are of very dark brown or black colour, while the elytral clothing, though sparingly present in the "cavities," can hardly be called cinereous.

Of the last segment it states—"Segmento ultimo magno, rotundato, medio impresso." This, though there is a faint mesial impression, agrees much more with the female of *P. impressa*, as do also the clothing and setæ.

I have a female which agrees very closely with the description of *P. mirabunda* Gyll., but, as the females of several of this group also do so, I hesitate to describe it more fully.

PSALIDURA FLAVOVARIA, n.sp.

♂. Elliptical-oval, convex. Prothorax finely granulate, elytra striate, interstices granulate; fascicles moderately close; forceps short, laminae long and overlapping. Black, rather densely clothed with fine scales varying on the elytra from yellow to reddish-brown, elsewhere yellow, undersurface bare except for a few scales, more marked on metasternum and at sides, setæ yellow, long; fascicles red, anal hairs dark brown.

Head convex, clothed with yellow scales intermingled with setæ. Rostrum short, ridges flattened, basal impressions shallow, but with a well marked groove leading from median notch to depression behind the marginal plate. Mentum bearded, dentate anteriorly. Mandibles simple, densely clothed with yellow setæ. Prothorax (6 × 6 mm.) evenly rounded on sides, median lobe slightly produced, collar-constriction feeble, median line traceable throughout; densely and finely granulate, granules contiguous, each bearing a long, stout, decumbent seta. Elytra (14 × 8 mm.) rather feebly and evenly rounded on sides, strongly declivous; apex mucronate, base widely emarginate, shoulders moderately prominent; striate, striæ broad, rather indistinctly divided into foveæ by transverse setigerous ridges, interstices closely granulate in double series except on the fourth and sixth, and ends of the second interstices, where they are in single series; sutural interstices widened at base, and to less extent the third and fifth also, granules fine, umbilicated, setigerous; sides irregularly granulate. Metasternum widely concave, moderately raised at sides. Fifth ventral segment moderately deeply excavate, excavation barely reaching to anterior margin; preanal fossa deep, not very sharply marked off from rest of excavation; posterior border fringed laterally with short hairs, supernumerary ridges present at sides; fascicles small, moderately close (1 mm.), situated just within the edge of the excavation. Forceps short, thin, with the blades turned on themselves near apex; laminæ very long and curved, rather narrow near base, but broadening out to apex, apices widely rounded, overlapping; forceps fringed along inner edge. Postanal process of apical tergite strongly bearded. Legs moderately long, clothed with yellow setæ, and denser black spines on undersurface of tibiæ. Dimensions: ♂, 20 × 8 mm.

Hab.—South Australia?(Macleay Museum).

Closely allied to *P. Sloanei*, but differing in its smaller size, finer granulation, and in the colour of the clothing; the abdominal fascicles are also much smaller than in that species, though about the same distance apart. My specimen is from the Macleay Museum, and bears a label "S. Aust.?"; it belongs to a group

which is (with the exception of *P. falciformis*) confined to the south-eastern corner of Australia, and may have come from the eastern portion of South Australia.

PSALIDURA SLOANEI, n.sp.

♂. Elongate-oval, convex. Prothorax finely granulate, elytra striate, interstices granulate; fascicles moderately close; forceps short, thin, laminae broad and overlapping. Black, opaque, densely clothed with scales varying in colour from light grey to yellow and brown; sides of metasternum and ventral segments lightly clothed with yellow pubescence; setae yellowish-brown; fascicles and hair reddish.

Head strongly convex, densely clothed. Rostrum short, internal ridges more prominent at base than external; basal impressions and median notch strongly marked, behind marginal plate is a deep pit with a groove running along middle from basal notch to pit. Mentum sparingly bearded, and with a median dentiform projection anteriorly. Mandibles simple, clothed with yellow and brown setae. Prothorax (7 × 8 mm.) evenly rounded on sides, widest about middle, median lobe feebly produced, collar-constriction well marked; disc slightly flattened, median line obsolete; granules fine, discrete, rounded, each with a large setigerous puncture on posterior or lateral aspect. Elytra elongate-ovate (16 × 10 mm.), very little wider than prothorax, evenly rounded from base to apex, base widely emarginate, shoulders prominent, tuberculiform; apex mucronate; striate, striae somewhat wavy, transversely and feebly rugate; interstices prominent, convex, granulate, granules rounded, setigero-punctate, sutural interstice granulate in double series in basal half only; third, fifth, and seventh in double series; second, fourth, and sixth in single series, becoming double in places; sides longitudinally striate, interstices granulate. Metasternum concave, deeply grooved in middle, raised antero-laterally not quite to level of middle coxae. Fifth ventral segment deeply excavate, excavation reaching anterior margin only in middle line, preanal fossa deeply sunken, hidden, with a median groove running from fossa to base

of segment; posterior edge only visible at sides, supernumerary ridges present at sides; fascicles stout, moderately close (1 mm.), situated just within excavation. Forceps short, blades thin and turned on themselves at apex; laminae long, rounded at apex and overlapping, fringed at base with short yellow scales extending along forceps. Apical tergite strongly bearded. Legs rather long, densely clothed with pale scales and darker setae.

♀. Of a shorter, more oval form than ♂; head and prothorax (6.5 × 7 mm.) as in ♂; elytra (14 × 9 mm.) more gradually produced at apex, shoulders not quite so prominent, sculpture as in ♂; ventral segments convex, with a rather faint impressed line running down third, fourth, and fifth segments, expanded in middle of each segment into a shallow depression. Dimensions: ♂, 23 × 10; ♀, 22 × 9 mm.

Hab.—Wagga (Macleay Museum), Mulwala (T. G. Sloane).

Closely allied to *P. impressa*, but differing principally in the laminae of the forceps being curved and overlapping; the forceps themselves are rather longer and thinner. I have dedicated this species to Mr. T. G. Sloane, who has taken it commonly around Mulwala, and to whom the opportunity of attempting this paper is primarily due.

PSALIDURA CULTRATA, n.sp.

♂. Elongate-ovate, rather robust, convex. Prothorax finely granulate; elytra foveo-striate, interstices granulate; fascicles moderately close; forceps short, obtuse, laminae long and overlapping. Black, opaque; elytral foveae sparingly clothed with minute muddy scales; setae black; fascicles and anal hair black.

Head convex, rather densely, rostrum more sparingly, setigero-punctate. Rostrum very short, internal ridges more prominent at base than the external, basal sulci rather shallow but with a well defined median notch, median area depressed, running into pit behind marginal plate. Antennae with the second joint of funicle noticeably smaller than first. Mentum sparingly bearded, dentate anteriorly. Mandibles simple, clothed with long setae. Prothorax (7 × 8 mm.) evenly rounded on sides, widest about

middle; median lobe feebly produced, disc feebly flattened in centre, with faint collar-constriction and well marked median line; granulate, granules fine, larger about collar-constriction and sides of base, closely set and setigerous. Elytra(16 × 9·5 mm.) evenly rounded on sides, strongly declivous; base rather deeply emarginate, shoulders thickened, outturned and prominent; apex mucronate; foveo-striate, foveæ almost quadrilateral, separated by rather low transverse ridges; interstices slightly wavy in course, finely setigero-granulate, sutural interstice only prominent at base; second, fourth, and sixth in single series, somewhat irregular; third, fifth, and seventh in double series; sides longitudinally striate, interstices granulate. Metasternum widely concave, raised laterally almost to level of middle coxæ. Anal excavation moderately deep, extending to anterior margin in the middle line; preanal fossa not very sharply marked off, with a median line or groove extending from fossa to anterior margin; posterior edge with a short fringe of black hair at the sides; fascicles moderately close(1 mm.) and situated well within the excavation. Forceps extremely short and obtuse, not quite meeting at apex; laminae very long, parallel-sided, apices broadly rounded, overlapping. Penis narrowed towards apex, which is bulbous. Postanal process of apical tergite strongly bearded. Legs moderately long, clothed with black setæ and rather stout spines along undersurface of tibiae.

♀. Somewhat smaller and more elliptical in shape, apex not so abruptly rounded; head and prothorax(6 × 7·5 mm.) as in ♂; the median line, however, is not present; elytra(14 × 9 mm.) with the foveæ not quite so distinct; ventral segments larger, feebly convex, with shallow lateral impressions, and a median impression on the apical segment. Dimensions: ♂, 23 × 9·5; ♀, 21 × 9 mm.

Hab.—“Australia”(Brussels Museum); Victoria, Melbourne.

This species has been sent to Mr. A. M. Lea from the Brussels Museum under the name of *P. mirabunda* Gyll.; but, for reasons cited under that species, I am inclined to maintain it as distinct. From *P. impressa*, it differs, *inter alia*, in the blunter and stouter forceps. It is more closely allied to *P. monticola*, which may

later be shown to be entitled only to varietal rank. I am indebted to Mr. A. M. Lea for my specimens.

PSALIDURA MONTICOLA, n.sp.

♂. Of an elongate, subparallel, form, convex. Prothorax finely granulate; elytra foveo-striate, interstices granulate; fascicles moderately close; forceps short, laminæ very long, not overlapping. Black, opaque, sparingly clothed with minute muddy scales; setæ dark brown, fascicles red.

Head convex, rather closely setigero-punctate. Rostrum short, external ridges somewhat flattened, internal ridges prominent, separated at base; basal impressions well defined, median area depressed in front into a deep pit behind emargination. Mentum sparingly bearded, anteriorly dentate. Mandibles simple, clothed with long setæ. Prothorax(6 × 6.5 mm.) rounded on sides, feebly produced in front, disc somewhat flattened, collar-constriction faint, median line traceable throughout; closely and finely granulate, granules setigero-punctate, rounded, smaller and closer together in centre than at sides. Elytra(14 × 8 mm.) subparallel, widest beyond middle, and feebly rounded to base and apex; apex abruptly rounded, mucronate; base widely arcuate, shoulders not prominent; foveo-striate, foveæ transverse, rather irregular; interstices granulate, granules fine, setigero-punctate, arranged for the most part in double series, the fourth and sixth in parts in single series, sutural interstice flattened and thickened at base, elsewhere represented by a row of minute granules; sides granulate. Metasternum declivous posteriorly, widely concave, sides raised almost to level of middle coxæ. Anal excavation deep, reaching to anterior margin; preanal fossa hidden, posterior edge fringed at extreme sides; fascicles moderately separated (about the same distance apart as in *P. impressa*), rather small, situated just within border of declivity. Forceps very short, barely meeting at apex and not projecting beyond elytra; laminæ very long, apices widely rounded, meeting but not overlapping. Penis narrow, apex truncated, feebly notched. Legs moderately long, tibiæ with grey scales and strong black setæ or spines along under side.

♀. Of a more oval form, apex more gradually produced. Head and prothorax (5 × 6 mm.) as in ♂, but prothoracic impressions absent; elytra (14 × 9 mm.) more rounded on sides, apex not mucronate, shoulders slightly more prominent, sculpture less regular; undersurface slightly convex, fifth ventral segment with a well defined median impression not reaching base or apex. Dimensions: ♂, 20 × 8 mm.; ♀, 20 × 9 mm.

Hab.—Victoria: Buffalo Mountains (T. G. Sloane); Mt. Macedon.

Close to the preceding species, and to *P. impressa*; the form of the laminae will at once distinguish it from the latter. From *P. cultrata* it differs in its more parallel-sided form, and somewhat differently sculptured elytra; the depressions in the elytral striae are smaller and much more irregular, while the intrastrial granules are more prominent; the forceps are as in *P. cultrata*, but the laminae merely meet at the apex and do not overlap; the penis is also differently shaped; the abdominal fascicles are slightly further apart, and somewhat differently set.

PSALIDURA ABNORMIS Macleay, *loc. cit.*, p. 215.

♂. A small parallel-sided species, without evident forceps. Black, legs red; sparingly clothed with muddy-brown scales, negro-setose.

Head convex, rostral ridges flattened, sulci obsolete at base, median area strongly depressed; mentum bearded, dentate anteriorly. Prothorax (6.5 × 6.5 mm.) rotundate, apex slightly produced, feebly depressed along median line; very finely and closely granulate. Elytra almost parallel-sided, scarcely wider than prothorax (13 × 7 mm.); base arcuate, shoulders tuberculiform; striae transversely ridged, almost foveate, interstices not much narrower than striae, finely granulate in double series throughout except on declivity, where they are in single series, but closely placed and not larger than on the rest of the interstice. Metasternum concave, the lateral borders raised in the form of a distinct tubercle to the level of the middle coxæ. Apical segment deeply excavate, the excavation reaching anterior margin for a considerable distance on either side of the middle line; fossa deep, transverse, running out towards each postero-lateral angle;

fascicles small, situated far apart, almost at extreme margin of segment; forceps hidden except the apices, which are rounded, convex externally and concave internally, not meeting; laminæ very small, projecting slightly beyond apex of forceps. Apical tergite visible between blades. Dimensions: ♂, 19 × 7; ♀, 18 × 7·5 mm.

Hab.—New South Wales: Goulburn, Yass, Gunning, Shoalhaven.

The identity of this species is unfortunately somewhat open to dispute, as I cannot say with certainty that the type has been examined. Under the label of *P. abnormis*, in the Macleay Museum, there is only a female, while the pair in the Australian Museum bear the locality Monaro. Macleay, in his paper, described *P. abnormis* as from Argyle, and the species described above is from that locality; furthermore, I have found, among the Macleay duplicates, a specimen bearing the name *P. abnormis* in Macleay's handwriting. This species extends along the southern highlands, but in Monaro its place is taken by two other forms, both at present undescribed; one is the pair above mentioned, in the Australian Museum; and the other has been thought to be *P. d'Urvillei*; pending investigation into the identity of the latter, I have described neither as new.

P. abnormis is replaced, further to the west, by *P. assimilis*.

PSALIDURA ASSIMILIS, n.sp.

♂. Elongate, subparallel, convex. Prothorax finely granulate; elytra striate, interstices rather coarsely granulate; anal excavation deep; forceps hidden. Black, granules shining, legs reddish-brown, sparingly clothed with minute black scales between the granules; legs clothed with stout black setæ intermingled with light yellow scales; abdomen with a few sparse yellow scales; nigro-setose.

Head convex, strongly somewhat rugosely punctured. Rostrum fully excavate, ridges flattened, lateral basal sulci almost obliterated; median basal notch very deep, leading across median area into a Λ -shaped sulcus behind marginal plate. Mandibles

simple, slightly lipped. Mentum bearded, anteriorly dentate. Prothorax (7×6.5 mm.), feebly dilated on sides, widest in front of middle, base truncate, apex slightly produced in middle; median impression and collar-constriction rather faintly marked; disc finely, closely, and evenly granulate, the granules becoming larger on the sides. Elytra (14×8 mm.) very little wider than prothorax, gently rounded on the sides, apex not mucronate, base emarginate, shoulders prominent, tuberculiform; disc regularly striate, striæ slightly wavy in course, and crossed by numerous low rugæ, interstices regularly setigero-granulate, sutural granules much finer than the others, in double series only at base; second interstice in double, the others in single series; all the interstices stopping short at the apical declivity; the third, fifth and seventh each being represented on the declivity by two or three isolated slightly larger granules. Metasternum concave, lateral margins raised to level of middle coxæ. Anal excavation deep, extending to anterior margin of the segment for a considerable distance on either side of the middle line; preanal fossa deep, transverse; posterior border without any sinuosity; fascicles situated far apart, near the posterior margin of the excavation. Forceps hidden except the apices, these widely separated, obtusely pointed, the laminae being very small, and situated on the inner surface, slightly projecting beyond tips of forceps. Penis truncate, apex notched. Legs moderately long, tibiæ feebly sinuous.

♀. Of a slightly more ovoid form than ♂, elytra more narrowed posteriorly, this difference not being so marked as in *P. abnormis* or other species of the genus; in the head, prothorax (6.5×7 mm.), and elytral sculpture (14×9 mm.), it resembles the male; ventrally it differs in being slightly convex, in wanting the lateral tubercles on the metasternum, in having the intermediate segments longer, and in the apical segment not being excavate, but with a faint impressed line posteriorly. Dimensions: ♂, 21×8 ; ♀, 21×9 mm.

Hab.—New South Wales: Hartley (E. W. Ferguson), Orange (T. G. Sloane).

Very close to *P. abnormis* Macleay, but differing in its larger size, different clothing, darker setæ, and in elytral

sculpture. The elytral granules in *P. assimilis* are rather coarser, in single series (except on the third interstice), and with only the alternate interstices represented (by two or three granules each) on the declivity; the humeral angles are also more prominent.

PSALIDURA PERLATA, n.sp.

♂. Of a short, ampliate form, convex. Prothorax finely granulate; elytra striate, interstices granulate, apical excavation shallow, no fascicles present; forceps hidden, apices not meeting. Black, legs reddish; densely clothed with grey and yellow scales, giving elytra a maculate appearance; apical tergite clothed with yellow hair; legs with yellow setæ and short white scales intermingled; setæ yellow.

Head wide, convex, rather sparingly setigero-punctate. Rostrum well marked off from head, external ridges wide, feebly convex, internal ridges depressed, lateral sulci and median basal notch represented by three small isolated impressions along transverse sulcus; median area narrow, depressed in front behind marginal plate. Mandibles simple, the outer portion thickly covered with stout yellow setæ. Mentum sparsely bearded, dentate anteriorly. Prothorax (6 × 7 mm.) roundly dilated, widest in front of middle, apical lobe feebly produced, no collar-constriction nor median line. Closely covered with round, black, shining discrete granules, closer together and finer in the centre. Elytra (13 × 8 mm.) evenly rounded on sides, very wide; apex strongly flanged, not mucronate; base feeble excavate, humeral angles marked but not prominent; disc with rather shallow longitudinal striæ, the sculpture of which is obscured by the thick clothing but not foveate; interstices rather broad, irregularly granulate in double series, the granules unequal in size, the larger ones slightly flattened, shining, each bearing a long decumbent yellow seta. Sides somewhat irregularly granulate, rather more coarsely than on disc. Metasternum transversely concave, the lateral margins raised on each side in the form of a prominent tubercle beyond the level of the middle coxæ. Third and fourth ventral

segments short, depressed along anterior margin; fifth shallowly excavate, the limits of the excavation not well defined but extending to the anterior margin of the segment for some distance on either side of the middle line; preanal fossa in the form of a parallel-sided sulcus, deepest in the middle, running the whole length of the posterior border, and separated from the excavation by a definite ridge; no fascicles present. Forceps hidden except the apices, which are rounded and with short fringe of bristles on the inner surface. Penis blunt, almost truncate. Legs moderately long; anterior tibiae with the lower end bent sharply inwards, almost at right angles. Dimensions: ♂, 19 × 8 mm.

Hab.—South Australia, Eucla—West Australia, Eyre (C. French).

A remarkable species lying on the border line between *Psali dura* and *Talaurinus*. In general appearance close to *T. Riverinæ* Macl., but more nearly allied to *P. abnormis* Macl., in the form of the metasternum, and in the forceps. The form of the anal excavation, however, is very similar to that in *T. Riverinæ*, and that species may have to remain, where Lea* has placed it, in *Psalidura*. On dissecting the specimen before me, as far as possible, the existence of a vertical plate between the ends of the forceps was disclosed.

POSTSCRIPT (*added November 29th, 1909*).—While the foregoing paper has been passing through the press, I have been able to obtain a translation of the second part of Dohrn's paper, which throws light on some of the more obscure species. I should like, therefore, to add the following notes:—

P. decipiens Dohrn.—This species should, from Dohrn's description, be a member of the *P. forficulata*-group. It has the abdominal fascicles close together (1 mm.), but may be distinguished by its smaller size (12-13 mm.) and apparently coarser elytral sculpture.

P. mirabilis Kirby.—Dohrn has shown that the species hitherto regarded as *P. mirabilis* can no longer be so; and he has named

* Trans. Roy. Soc. South Australia, xxviii., 1904. p. 111.

it *P. Gyllenhalii*. As, however, *P. reticulata* Boisd., was founded on the female example of the same species, that name must take precedence. At present, I am ignorant of the true identity of *P. mirabilis* Kirby.

P. mirabunda Gyll.—Dohrn had before him three specimens, which he designated as Nos. 5, 6, and 7. No. 5, ♂, bears a label: "*Phalid impressa*, Dupont. N. Holl. Dupont"; and, while in a bad condition, bears evidence of dense elytral clothing. No. 6, ♂, bears two labels: "Tasmania" and "Mus. Gall." No. 7, ♀, is Gyllenhal's type.

Dohrn, after considerable discussion of the question, came to the conclusion that No. 5 = *P. impressa* Boisd., Nos. 6 and 7 = *P. mirabunda*; and he states that possibly, through long life and abrasion, the one might be reduced to the condition of the other. This is my own opinion, and I have little hesitation in stating that *P. mirabunda* Gyll., = *P. impressa* Boisd.

NOTES FROM THE BOTANIC GARDENS. No. 15. ON
A PLANT, IN FRUIT, DOUBTFULLY REFERRED
TO *CYMODOCEA*.

By J. H. MAIDEN AND E. BETCHE.

(Plate xlix.)

POTAMOGETONACEÆ.

CYMODOCEA(?) *CILIATA* (Forsk.) Ehrenb.

Murray Island, Torres Straits; (Charles Hedley, September, 1907; and specially brought under our notice by Mr. A. H. S. Lucas).